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SYNOPSES OF NEARCTIC EPHYDRIDAE (DIPTERA)

BY A. H. STURTEVANT [1] AND M. R. WHEELER [2]

It is our purpose, in the present series of synopses, to present accounts of all the Nearctic genera of Ephydridae not covered by the late E. T. Cresson, Jr. in his series of synopses (Trans. Amer. Ent. Soc. 68:101; 70:159; 72:227; 74:225), as well as of a few genera that were included by him but that seem to us in need of revision.

It is unfortunate that Mr. Cresson did not live to complete this series of synopses. Any student of the family must use many of the diagnostic characters discovered by him; his studies are basic for the classification of the family. Even in the groups not included in the synopses, much of the system depends on his work, and without his careful and painstaking studies it is certain that many of the species described by him in scattered publications would still be unrecognized.

The use of the word "Nearctic" in our title calls for some explanation. We have attempted to include all species known from north of the southern boundary of the United States—not with the intention to imply that this arbitrary line forms a wholly natural separation between the Nearctic and Neotropical regions, but because our available material from south of it is not adequate. We have, however, presented what information we have on the extralimital distribution of such species as are known to occur within our region.

These studies are based primarily on our own private collections, specimens from which have been freely interchanged for study. Between us we have collected Ephydridae in 45 states, three Canadian provinces, and Lower California (the three missing states

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[2] University of Texas, Austin.

are Kentucky, Maryland, and Montana; we have seen specimens from each of them, in other collections). We have also had on loan extensive series from the collections of the University of Kansas (through C. D. Michener), Cornell University (through H. Dietrich), Iowa State College (through J. L. Laffoon), the Iowa State Insect Survey (through D. D. Millspaugh), the United States National Museum (through W. W. Wirth), the University of Minnesota (through E. F. Cook), the Carnegie Museum, Pittsburgh (through G. Wallace), and the private collection of J. L. Laffoon. In addition, one (or both) of us has visited the Museum of Comparative Zoology at Harvard University, the American Museum of Natural History, the California Academy of Sciences (San Francisco), and Pomona College. One of us (A.H.S.) made some notes in 1922 at the U. S. National Museum and at the British Museum; these latter, while useful, have not been included in the lists of " specimens examined ", since they were made before an adequate knowledge of the family had been acquired. All told, we have examined approximately 15,000 preserved specimens of Ephydridae.

Dr. K. W. Cooper, Dr. W. W. Wirth, and Dr. P. J. Darlington have kindly examined several type specimens for us; their notes appear in the discussions (in the genus *Hyadina* and elsewhere).

Under each species is a list of specimens that we have examined. In order to save space, we have given detailed localities and locations of specimens only for the rarer forms, or sometimes for marginal localities. We have, in most cases, listed published records only when they concern states or provinces from which we have not seen specimens. The bibliographic references under each genus and species include only those in which new names or new binomial combinations first appear.

It should be noted that the numbers of " specimens examined " do not necessarily give an accurate index of relative frequencies of the species, since the tendency is to preserve a higher proportion of the individuals of the less common species, and since the proportions saved differ with different collectors, who have worked in different parts of the country. In general, however, these numbers do often give a rough index of the order of frequency of the various species, especially of those with similar geographical ranges.

The present paper is to be considered as what may be called a " first order " survey, since it is probable that several of the species listed (e.g., *Ephydra riparia, Scatophila despecta, Scatella stagnalis*) will be found to be complexes when genitalia and other less obvious characters are studied. The kind of thing that is likely to happen is illustrated, among the Acalypterae, by the work of Curran (1932, Amer. Mus. Novit. 517) on what was once called *Dictya umbrarum,* of Shewell (1939, Canad Ent. 71:131) on " Camptoprosopella vulgaris ", and of Patterson and associates (1942, Univ. Texas Publ. 4213, 4228, and later papers) on " *Drosophila repleta* " and its close relatives. We are convinced that most of the segregates in these and similar cases are valid species, but we also feel that it is useful to present accounts that are based on less detailed and time-consuming studies.

The family Ephydridae is one of the most distinct among all the Acalypterae. It may be recognized by the following characters:

Anal cell absent; first vein ending before middle of wing; auxiliary vein rudimentary, not ending in costa or in first vein; two distinct breaks in first costal section, one at humeral crossvein and one just before end of first vein; discal and second basal cells not separated by a crossvein; arista bare, pubescent, or pectinate (short ventral branches present only in *Ptilomyia* and *Asmeringa*); mesopleura hairy; preapical bristles never present on first or third tibiae; post-verticals divergent or absent.

The internal female genital organs are also very characteristic. Sturtevant (1926, Jour. N. Y. Ent. Soc. 34:10) described their structure in 17 genera, and we have since examined *Brachydeutera, Clanoneurum, Lipochaeta,* Wirth's new genus, two additional species of *Discocerina,* and one of *Scatella* (*S. dichaeta* and *S. stagnalis* are the two seen). There are thus 28 species, in 21 widely scattered genera, that have been studied. All of these have two short spermathecal ducts, with no terminal spermathecal enlargements, and a short, broad, heavily sclerotized ventral receptacle that is directed anteriorly—a combination of characters that is shared with no other known form.

Canace and related forms have been included in the family in the past, but do not seem closely related to it. Perhaps the nearest relative, among the forms that we have studied, is *Diastata*—which bears little superficial resemblance to any Ephydrid (see Sturtevant, 1942, Univ. Texas Publ. 4213:27).

A number of terms used in the keys and descriptions need explanation.

Interalar bristles.—In the Ephydridae in general there is often a bristle just lateral to the dorsocentral line and just anterior to the scutellum. We have found no case where a bristle was present at this level and precisely in line with the more anterior dorsocentrals. We have called this bristle the *interalar* (rather than the "intraalar", as Cresson and others have it); it is considered a dorsocentral by Becker and others.

Orbital bristles.—There are often bristles near the lateral margin of the front, on the orbits. Cresson, at times at least, has called these "orbitals" or "frontorbitals" only when they are proclinate. We have used the term *orbital,* regardless of whether the bristles in question are proclinate, reclinate, or divergent, and have used these descriptive terms in addition when needed.

Wing vein indices.—In order to save space we have used the indices currently applied in the literature on the Drosophilidae, as follows:

Costal index: length of the second section of costa (between apices of first and second veins) divided by length of third section (between apices of second and third veins).

Fourth-vein index: length of apical section of fourth vein (between posterior crossvein and margin of wing) divided by length of preapical section (between anterior and posterior crossveins).

We have used the older terminology for the wing-veins, rather than the Comstock-Needham system or any of its variants, because we are not convinced that the homologies of the veins of the higher Diptera are finally established.

EPHYDRIDAE: *Key to the Nearctic Genera and Subgenera*

1. Face hairy centrally and along oral margin 2
   Face bare centrally and along oral margin 10
2. Costa reaches only to or barely beyond end of third vein
   Scatophila Becker
   Costa reaches end of fourth vein 3
3. A pair of large interalars present but with no true dorsocentrals; facial bristles in a dense group near center of face; large species
   Cirrula Cresson
   At least one pair of true dorsocentrals in addition to the interalars; facial bristles not as above; size various 4

4. A long hair on outer surface of third antennal segment; upper face projecting, flattened between antennal foveae, perpendicular or receding below ..... **Setacera** Cresson
   No long hair on third antennal segment; face somewhat convex between antennal foveae 5
5. Dull black, without pollinosity; fourth tarsal segments all broader than long; no pulvilli; third antennal segment as broad as long New Genus [3]
   Not altogether as above 6
6. Pulvilli absent or nearly so; basal tarsal segment of third legs with dense long yellow hairs underneath; claws nearly straight 7
   Pulvilli evident; no dense yellow hairs beneath basal tarsal segment of third legs; claws curved 8
7. No posthumeral bristles (anterior to usual presuturals); two diverging orbitals; costa pectinate ..... **Dimecoenia** Cresson
   Posthumeral bristles present; three or more diverging orbitals **Ephydra** Fallén.... a
a. Cruciate intrafrontals large, numerous; often with two presutural dorsocentrals ..... subg. **Hydropyrus** Cresson
   With none, one, or rarely two intrafrontals; one presutural dorsocentral subg. **Ephydra** Fallén
8. Not more than two pairs of true dorsocentrals; disc of scutellum bare; arista usually bare or short plumose 9
   At least three pairs of true dorsocentrals; disc of scutellum hairy; arista longer plumose ..... **Coenia** Desvoidy.... a
a. Humeral bristles absent; three dorsocentrals .... subg. **Coenia** Desvoidy
   Humerals present; four dorsocentrals ..... subg. **Paracoenia** Cresson
9. ..... **Scatella** Desvoidy.... a
a. One long pair of diverging orbitals; wings with conspicuous pattern of black and white spots, some of them in the marginal cell subg. **Limnellia** Malloch
   Two or more strong diverging orbitals; marginal cell unspotted ..... b
b. A strong buccal bristle (near rear end of cheek); wings usually with white or clear spots ..... d
   Buccal margin with hairs but with no single markedly longer bristle; wings not spotted c
c. Arista with very short branches, or bare .. subg. **Lamproscatella** Hendel
   Arista distinctly pectinate ..... subg. **Philotelma** Becker

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[3] This genus, based on a new species from Ventura County, California, is to be described by Dr. W. W. Wirth. We have determined some specimens under Dr. Wirth's proposed name, but are not using it here, since it is not certain that his paper will be published before the present one. We have seen the species only from the type locality.

d. With a pair of strong presutural acrostichal bristles; posterior acrostichal hairs weak, irregular, often absent; presutural dorsocentrals present or absent ..... e

No presutural acrostichal bristles; postsutural acrostichal hairs strong to scutellum; presutural dorsocentral bristles strong subg. **Parascatella** Cresson

e. Presutural dorsocentrals strong ..... subg. **Neoscatella** Malloch

No presutural dorsocentrals ..... subg. **Scatella** Desvoidy

10. Second tibia with one to three well-developed bristles on basal two thirds of extensor surface 11

Second tibia without differentiated extensor bristles, though there may be numerous rather long hairs 14

11. Costa reaches to or a little beyond third vein 12

Costa reaches to fourth vein 13

12. Facial bristles large, comparable in size to ocellars; dark brown species **Dichaeta** Meigen

Facials hairlike, much thinner than ocellars; brown or cinereous gray species ..... **Notiphila** Fallén..... a

a. Facial series extending well above middle of facial profile, all much thinner than buccal bristle; second tibia with preapical extensor bristle ..... subg. **Agrolimna** Cresson

Facial series of three or four hairs, scarcely or not at all attaining middle of facial profile, about two of them larger, nearly as strong as buccal bristle; preapical extensor on second tibia absent or minute subg. **Notiphila** Fallén

13. Sternopleural bristle absent; mesonotal hairs minute and sparse, scarcely evident ..... **Oedenops** Becker

Sternopleural present; mesonotal hairs well developed **Paralimna** Loew.... a

a. Cheeks broad; eyes round; upper facial about as strong as proclinate orbital; opaque species with some cinereous or ochraceous areas subg. **Paralimna** Loew

Cheeks narrower; eyes elongate; upper facial stronger than proclinate orbital; dark or shining species without true cinereous surfaces subg. **Phaiosterna** Cresson

14. Antennae small, widely separated, situated in cavities; arista rudimentary, when visible very short, broad, and flat; face very short; bristles mostly absent ..... **Lipochaeta** Coquillett

Antennae normal in size and position; arista clearly evident; otherwise not as above 15

15. First femora greatly enlarged, their greatest width nearly two-thirds their length; first tibiae produced as strong apical spurs **Ochthera** Latreille

First legs of usual structure 16

16. Eyes pear-shaped, strongly narrowed below ..... **Glenanthe** Haliday

Eyes round or oval 17

17. Head in profile at least three times as high as thick; wings short and broad, scarcely reaching tip of abdomen; scutellum broad and flat 18
Head not remarkably high and thin; wings usually longer; scutellum usually not exceptionally flat 19
18. Second vein bent toward margin, very close to costa beyond end of first vein; posterior crossvein strongly bent at middle
Clanoneurum Becker
Second vein and posterior crossvein of usual type .... **Discomyza** Meigen
19. At least one well-developed pair of presutural dorsocentrals 20
No presutural dorsocentral pair evident 27
20. Second antennal segment with a spinous bristle on upper apical corner ... 21
Apical bristle of second antennal segment weak or absent 23
21. Posterior notopleural bristle at least four times as far from notopleural suture as is the anterior bristle 22
Posterior notopleural closer to notopleural suture; shining dark species
Typopsilopa Cresson
22. Small dark species; wings with crossveins somewhat clouded; face with a pair of upturned bristles near base of median prominence
Ptilomyia Coquillett
Larger species; wings with conspicuous pattern; face without upturned median bristles ..... **Ilythea** Haliday..... a
a. Costal index over 3.0 ..... subg. **Ilythea** Haliday
Costal index less than 2.0 ..... subg. **Zeros** Cresson
23. Posterior notopleural bristle at least four times as far from the notopleural suture as is the anterior one; if the latter is absent, then the former is well removed from the suture 24
Posterior notopleural closer to the notopleural suture 26
24. Arista bare or quite short pubescent ..... **Hydrina** Desvoidy
Arista pectinate 25
25. Face concave in profile; no prescutellar bristles ... **Lemnaphila** Cresson
Face convex in profile; strong prescutellars
Ilythea, subg. **Zeros** Cresson
26. Mouth opening small; clypeus hidden or visible at most along anterior edge; arista long pectinate to plumose above
Hydrellia Desvoidy
Mouth opening large; clypeus evident along sides as well as in front; arista pubescent to short pectinate
Napaea Desvoidy (see couplet 33)
27. Arista pectinate, though sometimes small and the branches pale and difficult to see 35
Arista bare or pubescent, rarely somewhat long haired 28
28. Antennae depressed into deep cavities; middle of face with a prominent bare shining black tubercle; orbitals and ocellars absent or minute
Gymnopa Fallén

Antennae not usually depressed in cavities; middle of face without shining tubercle; orbitals and ocellars evident or not 29

29. Second antennal segment with one to several spinous bristles on inner apex; small velvety cinereous species ....**Pelignellus** new genus

No strong apical bristles on second antennal segment 30

30. Acrostichal hairs absent or minute and sparse .....**Nostima** Coquillett

Acrostichal hairs clearly present 31

31. At least one well-developed orbital bristle 32

No evident orbital bristles 34

32. Face carinate, convex in profile, most prominent in middle; costa ends at third vein .....**Hyadina** Haliday (in part)

Face flat or only weakly carinate, in profile most prominent either at oral margin or just below antennae; costa reaches to fourth vein 33

33. Facial bristles usually all small; face retreating below, the oral margin posterior to antennal bases; tergites usually grossly sculptured, roughened, or pitted .....**Pelina** Haliday

At least one long facial bristle; face protuberant, the oral margin anterior to antennal bases; tergites relatively smooth though somewhat pollinose .....**Napaea** Desvoidy.....a

a. Clypeus not visible in profile view; wings hyaline with numerous definite brown spots .....subg. **Callinapaea** new subgenus

Clypeus visible in profile, gradually tapering in width, narrowing posteriorly; wings hyaline, sometimes with dark areas at tips of veins or on crossveins, or dark with pale spots .....b

b. Head bristles small and thin, ocellars less than half as long as the distance from their bases to anterior margin of front; costal index over 2.0 .....subg. **Parydra** Stenhammar

Head bristles larger, ocellars more than half as long as distance from their bases to anterior margin of front; costal index 2.0 or less subg. **Napaea** Desvoidy

34. Costal index less than 3.0; no anterior notopleural; frontal orbits narrow **Hyadina** Haliday

Costal index more than 3.0; anterior notopleural present; frontal orbits broad .....**Eutaeniotum** Oldenberg

35. Costa reaching third vein or barely beyond it; costal index about 0.3; mesonotum and front velvety brown .....**Brachydeutera** Loew

Costa reaches fourth vein; costal index usually greater 36

36. Second antennal segment with one to several spinous bristles on inner apex 40

No strong apical bristles on second antennal segment 37

37. No well-developed orbitals; acrostichal hairs minute or absent 38

At least one well-developed orbital; acrostichals present 39

38. Face strongly concave in profile .....**Lemnaphila** Cresson

Face strongly convex in profile .....**Nostima** Coquillett

39. At least one pair of true dorsocentrals; face densely pollinose **Hydrellia** Desvoidy
Interalar pair strong but without true dorsocentrals; face, front, and mesonotum thinly pollinose .....**Gastrops** Williston
40. Posterior notopleural bristle at least four times as far from the notopleural suture as is the anterior one 41
Posterior notopleural about as near notopleural suture as is the anterior one 48
41. No distinct orbitals or ocellars evident, the front with small hairs only; tiny, whitish species .....**Asmeringa** Becker
At least the reclinate orbital and usually the ocellars well developed ..42
42. A pair of intrafrontals well anterior to anterior ocellus; ocellars small, sometimes not distinguishable from hairs 43
No intrafrontals; ocellars at most very slightly anterior to anterior ocellus (i.e., not further than the diameter of an ocellus) 44
43. Face with a conspicuous shining black tubercle .....**Hecamede** Haliday
Face prominent below, with no shining area and no median tubercle **Pelignellus** new genus
44. Mesonotum more or less shining; face at least in part shining 45
Mesonotum and face wholly opaque, cinereous 46
45. Clypeus small, inconspicuous; face with niveous stripes **Diphuia** Cresson
Clypeus large, spade-shaped, fused to oral margin; face sometimes with cinereous regions, but not as narrow stripes **Athyroglossa** Loew.....a
a. Acrostichal hairs in about six definite rows; polished species, not pollinose subg. **Parathyroglossa** Hendel
Acrostichal hairs more numerous, irregular; shining but with more or less brownish pollinose areas present ..subg. **Athyroglossa** Loew
46. Face concave in profile, most prominent at oral margin **Atissa** Haliday
Face convex in profile, most prominent near its middle 47
47. Costal index less than 1.5; a pair of upturned bristles near the facial hump .....**Ptilomyia** Coquillet
Costal index greater than 1.5; no upturned facials ...**Allotrichoma** Becker
48. First and fifth abdominal segments quite short, third and fourth large, subquadrate; no prescutellar acrostichal pair of bristles **Trimerina** Macquart
Third and fourth abdominal segments not exceptionally larger than the others; prescutellars present or absent 49
49. Halteres dark; wings yellow with base usually blackish; ocellars small, set between posterior ocelli .....**Plagiopsis** Cresson
Halteres white or pale yellow; ocellars large or small, usually anterior to posterior ocelli 50
50. With a distinct pair of well-developed intrafrontal bristles, proclinate and parallel, anterior to the small ocellars 51

Without such conspicuous intrafrontals 52

51. Acrostichal hairs thick, in numerous rows; postverticals arising slightly before posterior ocelli; ocellars placed slightly before anterior ocellus .....**Paratissa** Coquillett

Acrostichal hairs large, in about four distinct rows between the interalar lines; postverticals behind posterior ocelli; ocellars small but clearly behind anterior ocellus .....**Pelignus** Cresson

52. Reclinate and proclinate orbitals approximately equidistant from eye margin; lower part of face flattened and wrinkled, with deep foveae above; large species, 3-4 mm. .....**Rhysophora** Cresson

Reclinate orbital distinctly further from eye margin than is the proclinate one 53

53. Ocellars clearly behind anterior ocellus; face usually shining centrally, rarely somewhat carinate above 54

Ocellars never behind anterior ocellus, usually anterior to it though rarely at about the same level; face usually pollinose to cinereous, usually carinate above, at least slightly
Discocerina Macquart.....a

a. Face with a series of strong upcurved bristles in addition to the usual facials; notopleural area with hairs as well as bristles
subg. **Polytrichophora** Cresson

Face without a series of upcurved bristles in addition to the usual facials, though there may be a single one at lower end of facial row (*Diclasiopa*), or a single one at upper end of facial row (*Hecamedoides*) .....b

b. Notopleural area not setulose; anterior notopleural placed well forward, about midway between humeral and posterior notopleural. c

Notopleural area usually setulose; anterior notopleural nearer to posterior one than to humeral .....e

c. At least three large facials, the upper one on a distinct shining papilla, with a single upturned bristle lateral to it; cinereous species
subg. **Hecamedoides** Hendel

Only two large facials, the upper one not on a shining papilla .....d

d. An upturned bristle at lower end of facial row; cinereous species, ours with whitish wings .....subgenus **Diclasiopa** Hendel

No additional upturned bristle; mostly shining species
subg. **Ditrichophora** Cresson

e. Abdomen more or less shining .....subg. **Discocerina** Macquart

Abdomen wholly cinereous, not at all shining
subg. **Hydrochasma** Hendel

54. .....**Psilopa** Fallén.....a

a. Basal segment of antenna clearly evident, nearly or quite as long as its width; third antennal segment rather pendulous; face sometimes somewhat carinate .....subg. **Ceropsilopa** Cresson

Basal antennal segment small, much shorter than its diameter .....b

b. Face with fine wrinkles; first metatarsi black and somewhat thickened
subg. **Leptopsilopa** Cresson
Face smooth; first metatarsi of usual structure, not thickened
subg. **Psilopa** Fallén (including *Helaeomyia* Cresson)

The above key includes 45 genera and 18 additional subgenera, all of which we have examined. We are arranging them in four subfamilies, largely in order to facilitate reference to Cresson's papers. We have kept his subfamily arrangements in all cases, and have assigned the genera not treated by him. We should have preferred somewhat different positions for several genera, but since we feel that only the Ephydrinae form a clear natural group, it has seemed most convenient to retain Cresson's arrangement. We have not recognized any of the categories between subfamilies and genera.

The following listing shows the subfamily assignments, and also gives the references for keys and discussions of species. For these genera included in Cresson's synopses of the Nearctic species, the references are listed only by synopsis number; these were published as follows:

I. 1942. Trans. Amer. Ent. Soc. 68:101-128.
II. 1944. Trans. Amer. Ent. Soc. 70:159-180.
III. 1946. Trans. Amer. Ent. Soc. 72:227-240.
IV. 1949. Trans. Amer. Ent. Soc. 74:225-260.

In the list below, the notation "S. and W." indicates that a synopsis of the genus is included in the present paper. It should be remembered that a number of what we have considered subgenera were treated by Cresson as full genera. In using his synopses of Discocerina, Psilopa, and Ilythea, this must be kept in mind.

Subfamily Ephydrinae

Cirrula (S. and W.)
Coenia (S. and W.)
Dimecoenia (S. and W.)
Ephydra (S. and W.)
Scatella (S. and W.)
Scatophila (S. and W.)
Setacera (S. and W.)
New genus (Wirth)

Subfamily NAPAEINAE

Brachydeutera (S. and W.)
Eutaeniotum (S. and W.)
Gastrops (Syn. IV; S. and W.)
Hyadina (Syn. IV; S. and W.)
Lipochaeta (S. and W.)
Napaea (Syn. IV; S. and W.)
Ochthera (S. and W.)
Pelina (Syn. IV; S. and W.)

Subfamily NOTIPHILINAE

Dichaeta (Syn. III; S. and W.)
Hydrellia (Syn. II)
Hydrina (Syn. II; S. and W.)
Ilythea (Syn. II)
Lemnaphila (Syn. II)
Nostima (Syn. II; S. and W.)
Notiphila (Syn. III)
Oedenops (Syn. III)
Paralimna (Syn. III)
Typopsilopa (Syn. III)

Subfamily PSILOPINAE

Allotrichoma (Syn. I)
Asmeringa (S. and W.)
Athyroglossa (Syn. I; S. and W.)
Atissa (Syn. I; S. and W.)
Clanoneurum (Syn. I)
Diphuia (S. and W.)
Discocerina (Syn. I)
Discomyza (Syn. I)
Glenanthe (Syn. I; S. and W.)
Gymnopa (Syn. I)
Hecamede (Syn. I)
Paratissa (S. and W.)
Pelignellus, n. gen. (S. and W.)
Pelignus (Syn. I)
Plagiopsis (Syn. I)
Psilopa (Syn. I)
Ptilomyia (Syn. I, as *Atissiella;* S. and W.)
Rhysophora (Syn. I)
Trimerina (Syn. I; S. and W.)

Subfamily EPHYDRINAE

CIRRULA

Cirrula Cresson, 1915. Ent. News 26:70.

There is a single species in this genus. It is one of the largest in the family, measuring up to 9 mm. in length.

Cirrula gigantea Cresson

Cirrula gigantea Cresson, 1915. Ent. News 26:71.

We have seen 15 specimens of this species, from Nova Scotia, New Brunswick, Maine, New Hampshire, Massachusetts, and Connecticut. Johnson (1925, Occas. Pap. Boston Soc. Nat. Hist. 7:275) gave collecting dates from April 22 to October 13. Leon-

ard (1928, List. Ins. N. Y., p. 859) recorded it from Long Island, New York.

This species occurs only in coastal regions.

COENIA

Coenia Desvoidy, 1930. Essai Myod., p. 800.
Caenia Loew, 1862. Mon. Dipt. N. Amer. 1:159.
Paracoenia Cresson, 1935. Trans. Amer. Ent. Soc. 61:356.

The genotype of *Coenia* is the European *Ephydra palustris* Fallén (as *Coenia caricicola* Desvoidy): *Caenia* is an emendation; the genotype of *Paracoenia* is *Coenia bisetosa* Coquillett. We have seen both of these genotypes, and feel that *Paracoenia* is best reduced to the rank of a subgenus.

The species of this genus are usually found in salt marshes—either coastal ones or about inland saline areas. Some records, however, are from freshwater marshes, where the species are, in general, less often found.

Coenia: *Key to the Nearctic Species*

1. Humeral bristles absent; three pairs of dorsocentrals
   Subgenus *Coenia*.....**curvicauda** (Meigen)
   Humeral bristles present; four pairs of dorsocentrals
   Subgenus **Paracoenia**.....2
2. Acrostichal hairs in two rows anteriorly 3
   Acrostichals in at least four irregular rows anteriorly 4
3. About three large facial bristles on each side; body length about 2.5 mm.
   paurosoma, n.sp.
   About six facials on each side; 4.5 mm. or more ...**platypelta** (Cresson)
4. The small divergent postocellars scarcely longer than the distance between their bases .....**fumosalis** (Cresson)
   The divergent postocellars several times longer than the distance between their bases 5
5. Acrostichal hairs small, thin, with lateral rows at the level of the sutural dorsocentrals usually not evident; smaller, more shining and less brownish species .....**turbida** Curran
   Acrostichal hairs larger, more conspicuous, the lateral rows usually reaching the sutural dorsocentrals; larger, more brownish pollinose species
   bisetosa Coquillett

Subgenus **Coenia** Desvoidy

Coenia (Coenia) curvicauda (Meigen)

Ephydra curvicauda Meigen, 1830. Syst. Beschr. 6:116.
Coenia curvicauda Macquart, 1935. Hist. Nat. Ins. Dipt. 2:530.
Coenia palustris Johnson, 1925. Occas. Pap. Bost. Nat. Hist. Soc. 7:275. (Not *Ephydra palustris* Fallén, 1823.)

The distinction between *palustris* (Fallén) and *curvicauda* (Meigen) was discussed by Cresson (1930, Trans. Amer. Ent. Soc. 65:119), and we have followed him in considering the American specimens *curvicauda.* We have examined 32 specimens, from Alaska, Saskatchewan, Manitoba, Michigan, Minnesota, Iowa, New York, and Massachusetts. Johnson also recorded it from New Hampshire.

Subgenus **Paracoenia** Cresson

Coenia (Paracoenia) bisetosa Coquillett

Coenia bisetosa Coquillett, 1902. Jour. N. Y. Ent. Soc. 10:183.
Paracoenia bisetosa Cresson, 1935. Trans. Amer. Ent. Soc. 61:356.

This species is widely distributed throughout the west, our most eastern verified record being from Pennsylvania. There are published records from New York and New England, but we are inclined to suspect that these records are based on material of *C. fumosalis.* We have examined 294 specimens, from British Columbia, Manitoba, Washington, Oregon, California, Idaho, Montana, Utah, Arizona, Nevada, Colorado, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Indiana, Pennsylvania, and Lower California. A series from Plummer, Minnesota (Univ. of Minn. collection) is labelled, " Nov. 19-20, 1933, Collected alive off snow—abundant at this time. D. Denning."

Coenia (Paracoenia) fumosalis (Cresson)

Paracoenia fumosalis Cresson, 1935. Trans. Amer. Ent. Soc. 61:356.

The type series included eight specimens, from Rockport and Nantucket Island, Massachusetts. We have examined nine specimens, from Woods Hole and Nantucket, Massachusetts, and from Somerset and Detroit, Michigan.

Coenia (Paracoenia) paurosoma new species

Similar to *C. platypelta* Cresson but scarcely half as long, with the small postocellars greatly reduced in size, or apparently absent, and with the facial bristles arranged in two rows of three each.

Black, with thin brownish pollinosity. Frontal triangle shining, with rather coppery reflections; two pairs of large diverging orbitals; apparently three pairs of verticals, the two anterior ones convergent; ocellar pair large. Face golden brown pollinose, with strong orals along the margin and three facials in each of the two diverging rows; a large buccal bristle below lower corner of eye. Antennae and aristae black, tthe latter loosely long-pubescent. Proboscis and palpi blackish-brown.

Mesonotum and scutellum brownish-black; acrostichal hairs clearly two-rowed anteriorly, with a few scattered extra hairs posteriorly; no prescutellars. Disc of scutellum haired, the apical scutellars easily twice length of lateral ones. Humeral bristle small; two large notopleurals, one mesopleural and one sternopleural; mesopleura with numerous hairs, and sternopleura with a few along upper edge around the bristle. Pleurae more definitely brownish pollinose across mesopleurae and pteropleurae. Halteres pale.

Abdomen black, lightly pollinose, appearing shiny at certain angles. Legs entirely black, including coxae and tarsi; mid femora with a row of 3-5 stout bristles near apex on upper side; first femora rather bristly. Wings with a faint smokiness throughout, without noticeable clouds over the crossveins; veins black. Costal index 4.0-4.1; fourth vein index about 1.2.

Body length about 2.5 mm.; wings, about 3.0 mm.

Holotype, Lander, Wyoming, August 16, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Three paratypes with the same data as the holotype, and one paratype from Rainbow Lake, Colorado (10,200 feet; K. W. Cooper).

Coenia (Paracoenia) platypelta (Cresson)

Paracoenia platypelta Cresson, 1935. Tr. Amer. Ent. Soc. 61:356.

The type came from southern California. We have examined 93 specimens, from Oregon, California (south to San Diego County), Nevada, Arizona, Utah, Wyoming, and Colorado.

Coenia (Paracoenia) turbida Curran

Coenia turbida Curran, 1927. Canad. Ent. 59:91.

This species was described from Yellowstone Park, Wyoming. We have seen 39 specimens, from Alaska, Washington, California (Inyo, San Diego counties), Idaho, Nevada, Utah, Arizona, New

Mexico, Colorado, Wyoming, Montana, North Dakota, and Minnesota.

DIMECOENIA

Dimecoenia Cresson, 1916. Ent. News 27:152.

The two Nearctic species are both to be found in salt marshes along the coast. The genotype (by original designation) is *Caenia spinosa* Loew. The species may be distinguished as follows:

1. Legs largely dark; hind tarsi of male shortened and thickened, the penultimate segment with a thick tuft of hairs protruding laterally **austrina** (Coquillett)
   Legs largely yellow; all tarsi slender .....**spinosa** (Loew)

Dimecoenia austrina (Coquillett)

Ephydra austrina Coquillett, 1900. Canad. Ent. 32:36.
Coenia virida Hine, 1904. Ohio Nat. 4:65.
Ephydra viridis Aldrich, 1912. Jour. N. Y. Ent. Soc. 20:101.
Dimecoenia austrina Cresson, 1916. Ent. News 27:152.

We have seen 40 specimens, from Virginia, Florida, Alabama, Texas (south to Brownsville), and California (Santa Clara to San Diego counties). Johnson (1913, Ann. Ent. Soc. Amer. 6:452) recorded the species from Bermuda.

Dimecoenia spinosa (Loew)

Caenia spinosa Loew, 1864. Berl. ent. Zeit. 8:99.
Dimecoenia spinosa Cresson, 1916. Ent. News 27:152.

We have examined 94 specimens, from Maine, Massachusetts, New York, New Jersey, Virginia, Maryland, North Carolina, Florida, Georgia, Alabama, Texas (south to Port Lavaca), and California (Ventura County to San Diego County). Johnson (1925, Occas. Pap. Boston Soc. Nat. Hist. 7:275) recorded it from New Hampshire, Rhode Island, and Connecticut, and gave New England collecting dates from June 27 to September 12.

EPHYDRA

Ephydra Fallén, 1810. Spec. Ent. Meth. Exh., p. 22.
Hydropyrus Cresson, 1934. Tr. Amer. Ent. Soc. 60:216.

The genotype of *Ephydra* is *E. riparia* Fallén, that of *Hydropyrus* is *E. hians* Say. There is no doubt that two distinct groups

are represented by these names, but we have felt that they are most conveniently treated as subgenera.

The species of this genus have aquatic larvae that are often to be found in enormous numbers in strongly saline or alkaline waters, in which case the adults are also often present in very large numbers. The preferences of the various species differ, and are noted below for each one. Several of the species have been taken at light traps.

We have examined more than 1300 pinned specimens of *Ephydra,* and have been unable to recognize among them as many species as are often listed. The difficulties arise largely in connection with what we have called *E. riparia,* and are discussed under that species.

EPHYDRA: *Key to the Nearctic Species*

1. With two posteriorly diverging rows of well-developed cruciate intrafrontals, the rows closer to the orbitals than to each other; often with two presutural dorsocentrals; face very thickly haired; arista short, weakly haired, thicker on its basal half
Subgenus **Hydropyrus**.....**hians** Say

Rarely with more than a single pair of intrafrontals, these as close to each other as to the orbitals, sometimes absent; only one presutural dorsocentral; face with a strong row of facials and one of orals, otherwise thinly short-haired; arista without markedly swollen basal region
Subgenus **Ephydra**.....2

2. Mesonotum opaque anteriorly, the posterior part and scutellum brilliant metallic shining; tarsi bright yellow, contrasting strongly with black tibiae and femora .....**auripes** Aldrich

Mesonotum and scutellum concolorous, more or less cinereous; if tarsi are yellow then at least tibiae are yellow in part 3

3. Strongly whitish cinereous; intrafrontals weak or absent; posterior crossvein makes an acute angle with the fifth vein; palpi very small
cinerea Jones

Mesonotum moderately cinereous; intrafrontals strong; posterior crossvein makes nearly a right angle with the fifth vein; palpi well-developed ..4

4. Scutellum roughly triangular, its apex rather pointed and well posterior to insertion of apical bristles; two or more well-developed posterior orbitals near lower posterior margin of eye, directed upward (as in *auripes*); female with a dense row of long bristles on posterior margin of mesopleura .....**pectinulata** Cresson

Scutellum rounded, its apex blunt and only slightly posterior to insertion of apical bristles; not more than one moderately developed lower posterior orbital; mesopleural bristling variable 5

5. Acrostichal hairs in only two rows anterior to suture; face and cheeks whitish cinereous; mesonotum only very faintly shining through the cinerosity ..... **niveiceps** Cresson
   Acrostichal hairs in more than two irregular rows anterior to suture; face whitish to brownish or yellowish; mesonotum distinctly subshining ..6
6. Female with a dense row of long bristles on the posterior margin of mesopleura ..... **bruesi** Cresson
   No unusually dense row of bristles on posterior margin of mesopleura **riparia** Fallén

Subgenus **Ephydra** Fallén

Ephydra (Ephydra) auripes Aldrich, 1912. Jour. N. Y. Ent. Soc. 20:99.

This species was described from Garfield, Great Salt Lake, Utah. We have seen 12 specimens, from Lake Paha, Washington; Summer Lake, Oregon; Lone Pine, Owens Lake, 12 miles south of Trona, California; and from Saltair, Utah. Evidently this is a species of alkaline waters in the Great Basin area. The lower posterior orbitals resemble those of *E. pectinulata* Cresson.

Ephydra (Ephydra) bruesi Cresson

Ephydra bruesi Cresson, 1934. Tr. Amer. Ent. Soc. 60:215.
?Ephydra thermophila Cresson, 1934. Tr. Amer. Ent. Soc. 60:215.

This species was described from Norris Geyser Basin, Yellowstone Park, Wyoming (1923). We have seen two females from the same basin (1941; U. S. National Museum). The single male taken with them is presumably conspecific, but we have not found any method of distinguishing this sex from *riparia*. *E. thermophila* was described at the same time as *E. bruesi,* and also came from Yellowstone Park; since it was based on a male, we are unable to decide whether it is this species or represents one of the variants that we have included under *riparia.*

Ephydra (Ephydra) cinerea Jones

Ephydra cinerea Jones, 1906. Univ. Calif. Publ. Ent. 1:159.
?Ephydra gracilis Packard, 1871. Amer. Jour. Sci. Arts 1:105.
Ephydra gracilis Aldrich, 1908. Psyche 25:30.

It is usual, following Aldrich, to apply Packard's name to this species. Packard described the larva only, from Great Salt Lake, and Aldrich (and others since) found the present species the common one there. However, as Aldrich noted, Packard's description

does not agree with the present species—a point that we can confirm, since larvae that we have collected and reared in southern California agree with the description given by Aldrich. Since both *auripes* and *riparia* also occur in the Great Salt Lake, and since we have observed very great fluctuations in the relative numbers of this species and of *riparia* at Corona del Mar, California, we believe that Packard's name should be discarded, as being unrecognizable. These fluctuations in relative numbers also lead us to doubt the view of Aldrich that the species was introduced into the San Francisco Bay area from the Great Salt Lake by railroad trains. It seems more likely that the wide western distribution of the species is a natural one, especially since Jones had material collected in southern California before the introduction is supposed to have occurred further north.

We have examined over 500 preserved specimens of this species, and have found it present by the tens of thousands at the salt works at the head of Newport Bay in southern California, and also along the coast of southern Texas. The following states are represented: California (Alameda and Inyo coounties, south to San Diego and Imperial counties), Nevada, Utah, Arizona, New Mexico, Texas (Corpus Christi to Brownsville); there are also specimens from " San Carlos Bay, Gulf of California," presumably near the middle of the peninsula of Lower California. The species is to be found only around strongly saline water. Its habits and immature stages were described by Schwarz (1891, Canad. Ent. 23:235) and by Aldrich (1912, Jour. N. Y. Ent. Soc. 20:77). We can confirm the observation by Schwarz that the adults sometimes dive under water, crawl about on the bottom, and then emerge from the surface and at once fly away. This species has also been reported (as *gracilis*) from Hawaii, where it has probably been introduced (Wirth, 1947, Proc. Haw. Ent. Soc. 13:141).

We have a single specimen from Vandalia, Illinois, not apparently associated with salt, and representing an unexpected extension of the geographical range. It has a somewhat less shining front than most specimens of *cinerea,* and may represent another species. However, we do not care to describe a new species in this difficult group without more material.

Ephydra (Ephydra) niveiceps Cresson

Ephydra niveiceps Cresson, 1916. Ent. News 27:151.

Cresson recorded seven specimens, from eastern Washington, Colorado, and Wyoming. We have seen three specimens, from Idaho (determined by Cresson), Wyoming, and Utah. All six localities are in or near the Rocky Mountains.

Ephydra (Ephydra) pectinulata Cresson

Ephydra pectinulata Cresson, 1916. Ent. News 27:151.

This was described from Wyoming. We have seen 21 specimens, from British Columbia, Manitoba, Wyoming, Minnesota, North Dakota, Nebraska, Colorado, and Washington. At least several of these records are from alkaline lakes; none is from a coastal area.

Ephydra (Ephydra) riparia Fallén

Ephydra riparia Fallén, 1813. Handl. K. Svensk. Vet.-Akad. 34:246.
Ephydra macellaria Egger, 1862. Verh. zool. bot. Ges. Wien. 12:779.
Ephydra subopaca Loew, 1864. Berl. ent. Zeit. 8:98.
Ephydra obscuripes Loew, 1866. Berl. ent. Zeit. 10:50.
Ephydra halophila Packard, 1868. Proc. Essex Inst. 6:49.
Ephydra millbrae Jones, 1905. Univ. Calif. Publ. Ent. 1:155.

In addition to the above there is a considerable European synonymy. The form is variable in color, and is also found in a variety of habitats. It is a characteristic form from alga-filled tide pools, and also occurs inland in saline or alkaline areas, and sometimes around apparently freshwater seepages. The individuals with yellow legs are sometimes distinguished, as *macellaria,* from those with extensive darkening at least on the femora (*riparia* = *millbrae*). All the material we have seen from east of the Mississippi River is "*macellaria*"; in the western states both forms occur. There may well be more than one species here, but so far we have been unable to make any satisfactory divisions.

We have examined 572 specimens (including the types of *subopaca, obscuripes,* and *halophila,* in the Museum of Comparative Zoology at Harvard University) from Europe, Alaska, Saskatchewan, Manitoba, Quebec, New Brunswick, Maine, New Hampshire, Massachusetts, New York, Maryland, Virginia, Illinois, South Dakota, Minnesota, Kansas, Nebraska, Oklahoma, Texas,

Louisiana, Colorado, New Mexico, Utah, Wyoming, Arizona, Nevada, Washington, Oregon, California, and Lower California. The species has been recorded (as *subopaca*) by Johnson from Connecticut and Rhode Island, and by Aldrich from New Jersey.

The habits and pre-imaginal stages have been described by Jones (1905) and others. We are convinced that the objects described by Jones as the eggs of this species had nothing to do with *Ephydra,* the eggs of which are of the usual rather elongate acalyptrate type, without filamentous appendages such as Jones figures.

Subgenus **Hydropyrus** Cresson

Ephydra (Hydropyrus) hians Say

Ephydra hians Say, 1830. Jour. Acad. Nat. Sci. Phila. 6:188.
Ephydra crassimana Loew, 1865. Berl. ent. Zeit. 9:182.
Ephydra californica Packard, 1871. Amer. Jour. Sci. Arts 1:103.
Ephydra tarsata Williston, 1893. N. Amer. Fauna 7:257.
Ephydra salina Curran, 1931. Amer. Mus. Novit. 492:7.
Hydropyrus hians Cresson, 1934. Tr. Amer. Ent. Soc. 60:216.

We have examined 253 specimens, from Manitoba, Washington, Oregon, California (Lake, Mono, Inyo, San Bernardino counties), Nevada, Utah, Arizona, Colorado (Lake Agnes, Cameron Pass, at 11,000 feet elevation), Wyoming, North Dakota, Nebraska, Minnesota, New York, Mexico (Guanajuato and Federal District). *E. salina,* which seems to us synonymous, came from Oklahoma. The single specimen from New York is most unexpected; it is in the Cornell University collection, and bears an apparently rather old printed label, " Ithaca, N. Y./19 ". A series of 30 specimens in the same collection labelled as coming from a " salt pool " at Ithaca (1917) includes only *E. riparia.*

This species seems to occur only about inland saline or alkaline areas, where it is sometimes very abundant. We have seen no specimens from coastal localities.

SCATELLA

Scatella Desvoidy, 1830. Essai Myod., p. 801.

This large genus contains a number of subgroups which have, in the past, often been considered as distinct genera. The following, described as genera, we are treating as subgenera of *Scatella*:

1. *Lamproscatella* Hendel, 1917. Deutsch ent. Zeit., 1917:42.
   Type: *Ephydra sibilans* Haliday.
2. *Limnellia* Malloch, 1925. Proc. Linn. Soc. N.S.W. 50:331.
   Type: *L. maculipennis* Malloch.
   Stictoscatella Collin, 1930. Ent. Mo. Mag. 66:133.
   Type: *Notiphila quadrata* Fallén.
   Eustigoptera Cresson, 1930. Tr. Amer. Ent. Soc. 56:126.
   Type: *Notiphila quadrata* Fallén.
3. *Neoscatella* Malloch, 1933. Bull. Bishop Mus. 114:9.
   Type: *N. atra* Malloch.
4. *Parascatella* Cresson, 1935. Tr. Amer. Ent. Soc. 41:357.
   Type: *Scatella pilifera* Cresson.
5. *Philotelma* Becker, 1896. Berl. ent. Zeit. 41:164.
   Type: *Notiphila nigripennis* Meigen, as *P. anomala* Becker.
6. *Scatella* Desvoidy, 1830. Essai Myod., p. 801.
   Type: *Ephydra stagnalis* Fallén, as *S. buccata* Desvoidy.
   Trixostomus Rondani, 1856. Dipt. Ital. Prodr. 1:130.
   Type: *Ephydra stagnalis* Fallén.

Of the above type species we have seen *S. sibilans, S. quadrata,* and *S. stagnalis.*

With respect to the recognition of subgenera, rather than genera, Cresson (1930) stated that he "rather approved of" Becker's course in treating *Lamproscatella* as a subgenus. In the case of *Parascatella,* the species *troi* Cresson furnishes a connecting link to *Scatella. Philotelma* has the appearance of a *Lamproscatella,* differing only in the length of the rays of the arista. Wirth (1948, Proc. Hawn. Ent. Soc. 13:277) has shown that the male genitalia of *Scatella* and *Neoscatella* are very similar, and that those of *Lamproscatella* resembles them. He found *Limnellia* rather more different—and it is our opinion that *Limnellia* is the one of the subgenera here recognized that is most nearly deserving of generic standing.

The species of this genus are most often found in muddy places. The members of the subgenus *Limnellia* are also to be taken on tree trunks, and have been found in flowers. Several species (e.g., *sibilans, obsoleta, stagnalis*) occur in salt marshes and also frequently in non-saline interior regions. Others, such as *dichaeta, salinaria,* and *setosa,* are more nearly limited to saline habitats.

SCATELLA: *Key to the Nearctic Species*

1. One long pair of diverging orbitals; wings with conspicuous pattern of black and white spots in marginal cell ....Subgenus **Limnellia**.....6
   Two or more strong diverging orbitals; marginal cell not spotted 2
2. A strong buccal bristle (near rear end of cheek); wings usually with clear or white spots 4
   Buccal margin with hairs, but with no single markedly larger bristle; wings not spotted 3
3. Arista with very short branches or bare ...Subgenus **Lamproscatella**..9
   Arista definitely pectinate .....Subgenus **Philotelma**.....14
4. A pair of strong presutural acrostichal bristles; posterior acrostichal hairs weak, irregular, or more often absent; presutural dorsocentrals present or absent 5
   No presutural acrostichal bristles; postsutural acrostichal hairs strong to scutellum; presutural dorsocentral bristles strong
   Subgenus **Parascatella**.....15
5. Presutural dorsocentral bristles strong .....Subgenus **Neoscatella**....17
   No presutural dorsocentral bristles .....Subgenus **Scatella**.....18

Subgenus **Limnellia.**

6. Face evenly arched, no lateral depressions; fourth vein index 1.5 or less; wings rather short, both anterior and posterior margins strongly convex .....**anna** Cresson
   Face with a lateral groove or depression on each side; fourth vein index distinctly greater than 1.5; wings longer, anterior and posterior margins only weakly convex 7
7. Dark spots in first posterior cell, on either side of posterior crossvein, wholly separated from third vein by clear areas .....**sejuncta** Loew
   Dark spots in first posterior cell closely apposed to posterior side of third vein 8
8. Tarsi black; a third dark area in first posterior cell adjacent to third vein, lying between the two referred to in couplet 7
   stenhammari Zetterstedt
   Tarsi more or less yellowish; only two definite dark spots at anterior edge of first posterior cell near its middle .....**quadrata** Fallén

Subgenus **Lamproscatella.**

9. Frontal triangle shining 10
   Frontal triangle opaque, at most with a slight metallic sheen 12
10. Face brown or black; pleurae not whitish dusted ...**quadrisetosa** Becker
    Face silvery whitish; pleurae whitish dusted 11
11. Disc of mesonotum and scutellum brownish; tarsi brownish; less than 2 mm. long .....**dichaeta** Loew
    Disc of mesonotum and scutellum about as whitish as the pleurae; tarsi yellowish at least basally; at least 2 mm. long .....**salinaria,** n. sp.

12. Largely whitish cinereous species 13
    Dark brown species ..... **sibilans** Haliday
13. Frontal triangle pointed anteriorly; strong facial bristles distinct to interfoveal hump ..... **cephalotes** Cresson
    Frontal triangle rounded anteriorly; no distinct facial bristles above middle of face ..... **nivosa** Cresson

Subgenus **Philotelma.**

14. Only Nearctic species ..... **alaskensis** Cresson

Subgenus **Parascatella.**

15. Mesonotum and scutellum densely brown pollinose, not at all shining; scutellum flat above ..... **triseta** Coquillett
    Mesonotum and scutellum somewhat shining; scutellum slightly convex above 16
16. Upper surface of interfoveal hump brown, contrasting with the face; wing spots usually small and indistinct ..... **marinensis** Cresson
    Face unicolorous, the hump not noticeably darker; wing spots distinct, larger ..... **melanderi** Cresson

Subgenus **Neoscatella.**

17. Face perpendicular below; a row of bristles on oral margin, but no long hairs ..... **setosa** Coquillett
    Face somewhat receding in profile at oral margin; numerous long hairs on oral margin ..... **crassicosta** Becker

Subgenus **Scatella.**

18. Face, front, and mesonotum heavily pollinose, the frontal triangle not shining 19
    Less heavily pollinose, frontal triangle somewhat shining 20
19. First costal section of male greatly swollen; face brownish yellow **obsoleta** Loew
    First costal section of male not swollen; face light gray **arizonensis** Cresson
20. Basal scutellars large, as long as the diverging orbitals .... **troi** Cresson
    Basal scutellars much smaller than apical ones or orbitals 21
21. Face, pleura, and sides of mesonotum densely silvery pollinose, contrasting with the subshining disc of mesonotum, making the specimen look as though it had been rubbed; wings not heavily pigmented, the pale spots therefore not very conspicuous 24
    Face brownish, or if whitish the pleurae are somewhat brownish; wing spots more distinct 22
22. Abdomen opaque; face densely silvery pollinose ... **quadrinotata** Cresson
    Abdomen somewhat shining; face brown or whitish pollinose, not densely silvery 23
23. Face whitish pollinose; mesonotum slightly shining, without gray stripes; only one clear spot in submarginal cell ..... **laxa** Cresson

Face usually brownish pollinose; mesonotum often with gray stripes; wings often with two or three definite clear spots in submarginal cell **stagnalis** Fallén

24. Costa not noticeably thickened between humeral crossvein and end of first vein; frontal triangle somewhat narrowed anteriorly, orbits broader anteriorly; western species .....**paludum** Meigen

In the male the costa is much thickened between the humeral crossvein and the end of the first vein (though less so than in *obsoleta*); frontal triangle more rounded, less narrowed anteriorly, orbits narrower anteriorly; eastern species .....**favillacea** Loew

Subgenus **Lamproscatella** Hendel

Scatella (Lamproscatella) cephalotes (Cresson)

Lamproscatella cephalotes Cresson, 1935. Tr. Amer. Ent. Soc. 61:360.

Cresson recorded five specimens, from Utah and Wyoming. We have examined 17 specimens, from Oregon, Idaho, Nevada, and California (Lassen and Inyo counties). The species apparently prefers alkaline areas.

Scatella (Lamproscatella) dichaeta Loew

Scatella dichaeta Loew, 1860. Neue Beitr. 7:40.
Lamproscatella dichaeta Becker, 1926. Lindner, Flieg. Pal. Reg. 56:85.

This species is European; we have seen only American material. We have examined 181 specimens, from Manitoba, Saskatchewan, Maine, New Hampshire, Massachusetts, New York, Alabama, Mississippi, Kansas, Oklahoma, Texas, North Dakota, Wyoming, Colorado, Arizona, Washington, Oregon, California, and Lower California.

In the Atlantic and Gulf states this appears to be mainly a beach form; on Cape Cod we have taken it between tide levels. In the west it occurs also about inland saline areas, and occasionally about fresh water.

Scatella (Lamproscatella) nivosa (Cresson)

Lamproscatella nivosa Cresson, 1935. Tr. Amer. Ent. Soc. 61:361.

Cresson recorded a single specimen, from 40 miles north of Lusk, Wyoming. We have seen nine specimens, from Manitoba (Russell), North Dakota, Nevada, and California (Modoc and Mono counties).

Scatella (Lamproscatella) quadrisetosa Becker

Scatella quadrisetosa Becker, 1896. Berl. ent. Zeit. 41:229.
Lamproscatella quadrisetosa Becker, 1926. Lindner, Flieg. Pal. Reg. 56:85.

This species was described from Norway. We have seen 150 specimens, from Alaska, Greenland, New Brunswick, Manitoba, Washington, Oregon, California (south to San Diego County), and New Mexico. This is, in general, a sea-beach form.

Scatella (Lamproscatella) salinaria new species

Black, strongly whitish cinereous, frontal triangle subshining, face silvery white. Tarsi yellow, brownish apically. Halteres white. Wings slightly milky, veins dark brown.

Branches of arista very short. Three outwardly directed facials, the lowest one shorter than the others. Cheeks broad, about the width of vertical diameter of eye. Two rows of acrostichal hairs, close to each other and rather irregular; posterior members enlarged to form prescutellar bristles. One postsutural and one presutural dorsocentral. Interalar definitely lateral to dorsocentral line. Lateral scutellar strongly curved, small, but longer and stouter than in some species of *Lamproscatella* (resembles that of *S. quadrisetosa*). Hairs and bristles black, except those on coxae and some on first femora, which are whitish.

Costal index about 5.0; fourth vein index about 1.6.

Length 2.3 mm.; wing, 2.2 mm.

Holotype, Trona, San Bernardino County, California, April 29, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 71: Trona, 12 miles south of Trona, Owen's Lake, Bridgeport, Ballarat, " Salt Wells, San Berna. Co.", California; Saltair (Salt Lake), Bear River Refuge, Utah. The two Utah series are in the collection of Iowa State College; those from the last three California localities are in the U. S. National Museum. The type locality is the same as that for *Asmeringa lindsleyi,* n. sp., and *Ptilomyia occidentalis,* n. sp.

Scatella (Lamproscatella) sibilans (Haliday)

Ephydra sibilans Haliday, 1833. Ent. Mag. 1:175.
Scatella sibilans Loew, 1860. Neue Beitr. 7:40.
Lamproscatella sibilans Hendel, 1917. Deutsch. ent. Zeit., 1917:42.

We have examined ten European specimens, and 179 Nearctic ones, from Greenland, Alaska, Manitoba, Washington, Oregon, California (south to San Diego County), Nevada, Arizona, Utah, Wyoming, Colorado, and Kansas.

Subgenus **Limnellia** Malloch

Scatella (Limnellia) anna (Cresson)

Limnellia anna Cresson, 1935. Tr. Amer. Ent. Soc. 61:363.

This species was described from four specimens taken in a greenhouse at Boston, Massachusetts. We have examined 16 specimens, from Massachusetts, New York, Virginia, Tennessee, Pennsylvania, West Virginia, Alabama, Missouri, Kansas, and South Dakota. The species has been taken on windows.

Scatella (Limnellia) quadrata (Fallén)

Notiphila quadrata Fallén, 1813. Handl. K. Svensk. Vet. Akad. 34:255.
Scatella quadrata Haliday, 1839. Ann. Nat. Hist. 3:410.
Limnellia quadrata Cresson, 1935. Tr. Amer. Ent. Soc. 61:363.

We have seen no European material. The American specimens are variable in wing pattern, the two wings of a single specimen often having different numbers of spots. The number of white areas in the marginal cell ranges from three to seven; no number higher than five has been seen except among the 15 specimens from Arizona, and none of these specimens has a number less than five. The Arizona form might well be considered a subspecies, but we have not adopted that course because there are so many specimens with five spots that could then not be assigned with certainty to either form, and most of the material that would be critical for the ranges of the subspecies falls in this class.

We have examined 40 specimens, from British Columbia, Washington, Oregon, Idaho, California (Los Angeles County), and Arizona (south to the Chiricahua and Huachuca mountains). Cresson (1935) recorded it from Alaska.

Scatella (Limnellia) sejuncta Loew

Scatella sejuncta Loew, 1863. Berl. ent. Zeit. 7:326.
Limnellia sejuncta Cresson, 1935. Tr. Amer. Ent. Soc. 61:364.

Loew described this species from Alaska. We have seen eight specimens, from Alameda, San Francisco, and Los Angeles counties, California.

Scatella (Limnellia) stenhammari (Zetterstedt)

Ephydra stenhammari Zetterstedt, 1846. Dipt. Scan. 5:1842.
Scatella stenhammari Loew, 1860. Neue Beitr. 7:40.
Limnellia stenhammari Cresson, 1935. Tr. Amer. Ent. Soc. 61:363.

We have not seen European material; the published accounts indicate considerable variability in wing pattern in European specimens. We have examined 18 specimens, from Alaska, Manitoba, Ontario, Maine, Massachusetts, New York, Maryland, South Carolina, Indiana, Iowa, Minnesota, and South Dakota. Cresson recorded the species also from New Jersey, Pennsylvania, Illinois, Idaho, and Washington.

Subgenus **Neoscatella** Malloch

Scatella (Neoscatella) crassicosta Becker

Scatella crassicosta Becker, 1896. Berl. ent. Zeit. 41:235.

This species was described from the island of Sylt, in the North Sea. We have seen two specimens, determined by Wirth, from Fairway Island in Hudson Bay (63° N., 90° W.) in the U. S. National Museum collection, A. Dutilly collector. It has not previously been recorded as Nearctic.

Scatella (Neoscatella) setosa Coquillett

Scatella setosa Coquillett, 1900. Proc. Wash. Acad. Sci. 2:462.
Scatella intermedia, Cresson, 1915. Ent. News 26:72.
Scatella intermedia, var. *obscuriceps* Cresson, 1915. Ent. News 26:72.
Neoscatella setosa Cresson, 1935. Tr. Amer. Ent. Soc. 61:359.

We have examined 66 specimens, from Alaska, Maine, Massachusetts, New York, New Jersey, Alabama, Texas (Galveston), Utah, Washington, Oregon, and California (south to Santa Clara County). Cresson has also recorded it from Pennsylvania and Idaho; we have seen a specimen from Idaho, in the U. S. National Museum collection, determined by Cresson (as *intermedia*), that is in fact a member of the subgenus *Scatella*. *S. setosa* is most often found in saline areas.

Subgenus **Parascatella** Cresson

Scatella (Parascatella) marinensis (Cresson)

Parascatella marinensis Cresson, 1935. Tr. Amer. Ent. Soc. 61:358.

We have examined 42 specimens, from Washington, California (south to San Diego County), and the Chiricahua Mountains in Arizona.

Scatella (Parascatella) melanderi (Cresson)

Parascatella melanderi Cresson, 1935. Tr. Amer. Ent. Soc. 61:358.

We have examined eight specimens, from Washington and California (Alameda and Santa Cruz counties).

Scatella (Parascatella) triseta Coquillett

Scatella triseta Coquillett, 1902. Jour. N. Y. Ent. Soc. 10:184.
Parascatella triseta Cresson, 1935. Tr. Amer. Ent. Soc. 61:358.

We have examined 83 specimens, from Oregon, California (south to San Diego County), Arizona, New Mexico, Nevada, Idaho, Utah, Colorado, South Dakota, and Texas (east to Austin).

Subgenus **Philotelma** Becker

Scatella (Philotelma) alaskensis (Cresson)

Philotelma alaskensis Cresson, 1935. Tr. Amer. Ent. Soc. 61:357.

This species was described from three specimens from Anchorage, Alaska. We have seen six specimens; one from Anchorage, Alaska, the others from Saskatchewan, North Dakota, Michigan, and Pennsylvania (Beaver Co.). At our request, Dr. W. W. Wirth has examined the type, in the U. S. National Museum, and reports that it has a pair of presutural dorsocentrals, as do the specimens that we have seen.

Subgenus **Scatella** Desvoidy

Scatella (Scatella) arizonensis Cresson

Scatella arizonensis Cresson, 1935. Tr. Amer. Ent. Soc. 61:365.

The type locality is the Chiricahua Mountains in Arizona. We have examined 35 specimens, from the Chiricahuas and from Castle Hot Springs in Arizona, and from Apache Creek (Catron County), New Mexico.

Scatella (Scatella) favillacea Loew

Scatella favillacea Loew, 1862. Mon. N. Amer. Dipt. 1:171.
Scatella nitidifrons Cresson, 1918. Tr. Amer. Ent. Soc. 44:67.

This species is very similar to *S. paludum* (Meigen), and may well turn out to be best considered a subspecies. Its recognition is due to Cresson, who described it as new; we have identified it

as *favillacea* on geographical grounds (*favillacea* was described from the "Middle States"), without checking the type. The selection of the western, rather than the eastern form as typical *paludum,* rests on Cresson's determination of specimens.

We have examined 108 specimens, from New Hampshire, Connecticut, New Jersey, Maryland, Alabama, Mississippi, Pennsylvania, Indiana (two specimens, determined by Cresson as *nitidifrons*), Michigan, Minnesota, Iowa, Missouri, Arkansas, South Dakota, and Texas. The western boundary is thus near the 100th meridian. The South Dakota record is from Pactola, in the Black Hills of the western part of the state; here and at Austin, Texas, both *favillacea* and *paludum* have been taken. In Texas, *favillacea* has been taken also at Liberty, Houston, and Harlingen; *paludum* at Bakersfield, further west. In western Nebraska (Hay Springs: Sturtevant; Chadron: Wheeler, Bacon) only *paludum* has so far been found. The types of *nitidifrons* came from Costa Rica. Johnson has recorded the species from Massachusetts.

Scatella (Scatella) laxa Cresson

Scatella laxa Cresson, 1933. Ent. News 44:70.

This species is very close to *S. stagnalis,* with the differences from that species mostly in the direction of resemblance to *S. paludum.* It can hardly represent a hybrid between the two, though such a suspicion is almost inevitable. We have examined 63 specimens, from Alaska, Washington, Oregon, California, Idaho, Nevada, Arizona, Texas (Marfa), and Lower California.

Scatella (Scatella) obsoleta Loew

Scatella obsoleta Loew, 1861. Berl. ent Zeit. 5:358.

We have examined 118 specimens, from Maine, Massachusetts, Connecticut, Delaware, Maryland, Virginia, Florida, Alabama, Mississippi, Louisiana, Pennsylvania, Indiana, Michigan, Minnesota, Iowa, Missouri, Nebraska, Arkansas, Oklahoma, Texas, Wyoming, Idaho, Arizona, Nevada, Washington, Oregon, California (Los Angeles and Orange counties), and Alaska. Johnson has recorded it from Rhode Island. It is evidently to be expected in every state.

Scatella (Scatella) paludum (Meigen).

Ephydra paludum Meigen, 1830. Syst. Beschr. 6: 118.
Scatella paludum Haliday, 1839. Ann. Nat. Hist. 3:410.

We have not seen European material of this species; our reasons for identifying it as *S. paludum* are given in the discussion of *S. favillacea*. We have examined 127 specimens, from Alberta, Washington, Oregon, California, Idaho, Nevada, Arizona, Utah, Wyoming, Colorado, New Mexico, Texas (east to Austin), western Nebraska, western South Dakota, Lower California, and Guadalajara, Mexico. The eastern limits of the distribution and their relation to the western limits of that of *favillacea* are discussed under that species. We should be inclined to consider *favillacea* a subspecies of *paludum* were it not that we have seen neither intermediates nor recombinants for the two characters used for their separation in the key. However, it should be noted that our material is not very extensive for the region where the two occur together (roughly the 100th meridian).

Scatella (Scatella) quadrinotata Cresson

Scatella quadrinotata Cresson, 1933. Ent. News 44:70.

This species was described from New York. We have examined 37 specimens, from Minnesota, Iowa, Illinois, Tennessee, Virginia, Oklahoma, and Texas (Austin).

Scatella (Scatella) stagnalis (Fallén)

Ephydra stagnalis Fallén, 1813. Handl. K. Svensk. Vet. Akad. 34:248.
Scatella stagnalis Walker, 1849. List. Dipt. Brit. Mus. 4:1104.
Ephydra picea Walker, 1849. List. Dipt. Brit. Mus. 4:1105.
Scatella lugens Loew, 1862. Mon. Dipt. N. Amer. 1:171.
Scatella picea Aldrich, 1905. Cat. N. Amer. Dipt., p. 630.

The specimens included here may represent more than a single species. There are great variations in the number, size, and shape of the spots on the wings, in the curvature of the distal sections of the second and third veins, in the strength of the bristles on the oral margin, in the density and color of the pollinosity on the face, pleurae, and mesonotum, in the distinctness of the mesonotal pattern, and in the size of the individuals. Most of the large series from any given locality include more than one type; these sometimes seem rather sharply distinct in more than one respect, with

the separate differences correlated. But when series from other regions are studied these correlations break down, and intermediates for these particular characters are found. Under these circumstances we have not found it possible to break the group into separate species—though when we had fewer specimens we believed we could recognize three distinct species. The comments by Cresson (1930, Tr. Amer. Ent. Soc. 56:121—especially the quotation from Haliday) suggest that a similar situation holds for the European *stagnalis*.

There is one noticeable geographical trend. In typical *stagnalis* there is a single median whitish spot in the submarginal cell, while in "*picea*" (="*lugens*") there are typically three such spots—a basal, a median, and an apical one. If a separation is made on the presence (however faint) or absence of the basal spot, geographical differences appear. All the 95 specimens from California are *stagnalis,* as are the ten from Alaska and the 13 from British Columbia. There is only a single *picea* each in the collections from Washington, Oregon, and Arizona. On the other hand, from Iowa there are 154 *picea* and only seven *stagnalis,* from Minnesota 128 *picea* and 38 *stagnalis,* from western Pennsylvania 28 *picea* and four *stagnalis*. In the other eastern states there are similar high frequencies of *picea,* but in saline areas along the Atlantic coast line *stagnalis* is again the usual type.

It is with some hesitation that we have separated the form here called *S. laxa,* for here also there are occasional specimens that partially bridge the gap between *laxa* and *stagnalis*.

As here defined, *S. stagnalis* is one of the three commonest widespread Nearctic Ephydridae. In most collections *Discocerina obscurella* (Fallén) is more numerous, and *Hydrellia griseola* (Fallén) is comparable to the present species. No other form is so numerous throughout the region. We have taken *stagnalis* between tide levels in Massachusetts, and have seen specimens from an elevation of 10,500 feet in Colorado.

We have examined six European specimens, and 918 Nearctic ones, from Alaska, Greenland, Northwest Territory, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, Newfoundland, Lower California, and the District of Columbia, and from 41 states (all except Georgia, Kentucky, Oklahoma, Rhode

Island, Tennessee, Vermont, and Wisconsin—in all of which the species is undoubtedly common; Johnson has recorded it, as *lugens,* from Rhode Island). Cresson has separated the Neotropical material formerly assigned to this species, as *S. obscura* Williston.

Scatella (Scatella ?) troi Cresson

Scatella troi Cresson, 1933. Ent. News 44:69.

This species was described from Idaho and Washington. We have examined 14 specimens, from Washington, California (Los Angeles County), western Texas, Pennsylvania (Pittsburgh), and West Virginia.

This species keys to the subgenus *Scatella,* where Cresson apparently felt that it belonged. However, it suggests *Parascatella* in its large size, well-developed lateral scutellar bristles, and general appearance. It has enlarged presutural acrostichals instead of dorsocentrals, which brings it to this subgenus; it remains doubtful whether the subgeneric separation should be modified to bring *S. troi* nearer its apparent relatives.

SCATOPHILA

Scatophila Becker, 1896. Berl. ent. Zeits. 41:237.

The genotype is *Ephydra caviceps* Stenhammar, from Europe. Although only a few species are known from the eastern United States, we have found a large number of undescribed species in the west, where they are most often associated with moist sandy areas. Most of the species occur only around fresh-water streams or lakes, but several have been taken, at least upon occasion, at strongly alkaline to saline areas. A few species have been found living in greenhouses. They are not always easily captured; when disturbed they frequently fly or hop only a short distance and thus escape the net.

In the past the species have been separated largely on color pattern and wing spotting, both of which seem to be too complex for accurate description and too variable to be practical. However, in a majority of the species the face of the male is highly modified from the more common female shape so that it is usually a relatively simple matter to identify males, whereas it is quite difficult

to be certain of female identifications. We have been forced to rely strongly on male characters in constructing a key to this difficult group, with a full realization of the difficulties one will encounter in attempting to determine single female specimens.

SCATOPHILA: *Key to the Nearctic Species*

1. A pair of strong presutural dorsocentrals present 2
   No presutural dorsocentrals present 3
2. Several white spots in marginal cell; halteres and tarsi pale; orbits not velvety black; wing spots conspicuous .....**bisignata** Cresson
   Marginal cell unspotted; halteres and tarsi dark; frontal orbits black, almost velvety; wing spots small, indistinct ....**cribrata** (Stenhammar)
3. Marginal cell with two or more distinct white spots 4
   Marginal cell unspotted, or with a single weak basal white area, or wings very pale and not appearing spotted 5
4. Scutellum with a distinct basal gray triangle; ♂ face flat, the oral margin with 2-3 stout bristles on each side, above them a cluster of smaller hairs arising from a brown area .....**picta**, n. sp.
   Scutellum indistinctly marked; ♂ face with a snout-like protuberance medianly below .....**unicornis** Czerny
5. Large quadrate median white spot of submarginal cell with a prominent dark central area .....**pulchra**, n. sp.
   Median white area of submarginal cell without a darker center 6
6. The larger facial bristle on outer lower corner turned upward and outward, *Scatella*-like; middle femora of male armed with a row of short spines along inner side .....**despecta** (Haliday)
   Lower facial not pointed upward and outward; middle femora of male lacking a row of spines 7
7. Body color mostly whitish to grayish white, usually with some darker markings, the disc of scutellum largely to entirely whitish 17
   Body color tan, brown, or black, usually with some lighter markings, the scutellar disc largely dark but often with basal and sometimes with apical gray areas 8
8. Acrostichal hairs of uniform size, in two regular rows reaching nearly to scutellum; tannish species with mesonotal pattern not or barely evident; reclinate orbitals far forward, 3-4 times as far from inner verticals as the latter are from the outer verticals ....**ordinaria**, n. sp.
   Acrostichals usually irregular in size and position, rarely forming two regular rows to scutellum; reclinate orbital not so far forward; mesonotal pattern usually evident 9
9. With a stout pair of presutural acrostichal bristles, as long as the ocellars or nearly so; small dark species with gray mesonotal pattern, highly spotted wings, black legs, strong head bristles; faces of the two sexes similar .....**exilis** Cresson

Without presutural acrostichal bristles though 1-2 pairs of hairs in this region are often enlarged; faces of the sexes unlike, that of the ♂ concave, flattened, protuberant, incised, tuberculate, or otherwise modified from the female type 10

10. Abdomen black, noticeably shining, especially on apical tergites, the basal tergites with at most thin pollen 11

Abdomen brown to black, rather heavily pollinose, rarely a bit glossy but never appearing truly shining 14

11. Wing base yellow, the blade with conspicuous pattern; scutellum with distinct basal gray triangle; ♂ face flat to concave, the margin protruding, golden yellow .....**hesperia**, n. sp.

Wing base not strongly yellowed; scutellum with indistinct basal gray area or none; face more brown than yellow, that of ♂ not shaped as described 12

12. Wings dark, the pattern of white spots inconspicuous; 2nd and 3rd veins straight; mesonotum dull brown, the pattern faint; ♂ face with a stout median conical tubercle, nearly as large as a third antennal segment, clothed with short hair .....**hirtirostris**, n. sp.

Wings with more evident spotted pattern, with 2nd and 3rd veins noticeably undulant in the vicinity of the neighboring white areas; face not as described 13

13. Disc of mesonotum with semi-shining glossiness; tarsi often yellow basally; ♂ face brown, protruding at margin, with an elongate median depression bordered (especially anteriorly) by dense curly hairs (see text for variations); ♀ face with some glossiness **variofacialis**, n. sp.

Mesonotum wholly dull pollinose; tarsi mostly brown to black; ♂ face with a low median ridge clothed with fine hair; ♀ face brown pollinose, not glossy .....**carinata**, n. sp.

14. Reclinate orbital about as far from inner vertical as the latter is from outer vertical; tarsi usually and tibiae often pale; ♂ face with median indentation at margin, and on each side a strong cluster of long hairs and bristles .....**adamsi** Cresson

Reclinate orbitals farther from inner vertical; tarsi usually dark but paler in viridella; ♂ face not as above 15

15. Cheek about as wide as width of 3rd antennal joint; frontal triangle scarcely differentiated in color from the anterior non-orbital areas; mesonotum usually with an olive tint; palpi pale, tarsi usually partly pale .....**viridella**, n. sp.

Cheeks narrower than width of 3rd antennal segment; frontal triangle and orbits dull brown, leaving two black triangular areas anteriorly on front; palpi and tarsi mostly dark 16

16. Median anterior dark stripe of mesonotum almost black, the pale areas on each side of it scarcely visible; dorsal surfaces of humeri noticeably pollinose; ♂ face flat in center, never membranous, the oral margin rather straight .....**hirsuta**, n. sp.

Median anterior dark stripe not much darker than other markings; pale marks over humeri continuous with dorsal marks on each side of median stripe; ♂ face sunken in middle, usually membranous to a noticeable degree, the oral margin protuberant ...**rubribrunnea,** n. sp.

17. Wings mostly pale, whitish, a spotted pattern scarcely evident; cheeks broad, more than twice as wide as width of 3rd antennal segment; eastern species .....**mesogramma** (Loew

Wings darker, a spotted pattern evident; cheeks narrower than above; western to southwestern species 18

18. Male face flat or concave in middle, with 2nd antennal segment thickly haired along inner side; ♀ face with a pair of diverging setae on upper carina (*disjuncta*) or not (*arenaria*) 19

Male face prominently convex medianly, the 2nd antennal segment with sparse hairs; ♀ face without a pair of diverging setae on upper carina 20

19. Male face flat to slightly concave medianly but not membranous, the 2-3 stronger hairs on margin at each side rather pale and weak; nearly uniformly whitish species, the abdomen mostly whitish dusted; ♀ face silvery gray, the cheek width greater than width of 3rd antennal segment .....**arenaria** Cresson

Male face concave, membranous medianly behind oral margin, with 2-3 stout black bristles on each side which are stronger than those of *arenaria*; less whitish, especially on abdomen; ♀ face with a pair of diverging setae on upper carina .....**disjuncta** Cresson

20. Male face evenly arched in middle, thickly haired, especially in two large lateral clusters in which 3-5 are stronger; wing spots distinct, including apical spot of submarginal cell; ♀ face gray with some brownish discoloration .....**bipiliaris,** n. sp.

Male face protuberant, the median part forming a broad cone which involves the oral margin, the cone surrounded by clustered hairs except at margin; wing spots rather indistinct; ♀ face silvery gray, the cheek width about equalling width of third antennal segment **conifera,** n. sp.

Scatophila adamsi Cresson

Scatophila adamsi Cresson, 1935. Tr. Amer. Ent. Soc. 61:369.

This species was described from two specimens from Missouri and two from Illinois. We have examined one specimen from Chesapeake Beach, Maryland (July), eight specimens from Austin, Texas (April and September through December), and one from Oakdale, Nebraska (August). We have also seen a single female, Henry County, Iowa (October), which is atypical in having the mesonotum, front and face much browner than on our other specimens.

The long bristles on the face of the male, and the median indentation of the oral margin, are quite distinctive, as is the position of the reclinate orbital. The female face is quite lowly convex with rather distinct foveae, and possesses about two bristles on the oral margin on each side but lacks large diverging setae on the interfoveal hump.

Scatophila arenaria Cresson

Scatophila arenaria Cresson, 1935. Tr. Amer. Ent. Soc. 61:372.

Cresson described the species from 12 type specimens and 32 other specimens from Washington. We have examined 69 preserved specimens, from Vantage, Washington (August), Ophir, Oregon (July), and Crowley Lake, Mono County, California (May). In addition, the following specimens seem to represent this species but we are less certain of their identification: 8, from Fairbanks, Arizona (June); 3, from Brown County, Nebraska (June); 1, from Pine County, Minnesota (May); 1, from Prospect, Oregon (August).

At both Vantage and Ophir the populations of this species were very large, thousands of individuals being observed on moist sand beaches; those from Vantage were on the broad sandy shores along the Columbia River, while those from Ophir came from the seacoast but were apparently limited to an area along the entrance of a small fresh-water stream into the ocean at this point.

Scatophila bipiliaris new species

A rather whitish pollinose species with considerable tan to brownish areas on mesonotum.

Male face: convex in middle, rounded anteriorly, strongly bristled and haired in two clusters, the hairs in each cluster becoming larger toward the oral margin, those nearest the margin being stout and bristly; the median area is thickly short haired. Face mostly gray pollinose, more brownish in the two clusters and between antennae. Second antennal segment with thin hairs on inner side. Female face rounded, convex, without a strong pair of diverging setae above, and with 3-4 stronger bristles near oral margin on each side and with smaller hairs above.

Front dull pollinose, tannish brown; antennae, including arista, black, the arista short pubescent. Cheeks gray pollinose, sometimes a bit silvery, their width equal to or slightly greater than width of 3rd antennal segment. Palpi and all of proboscis blackish to brownish.

Disc of mesonotum whitish to grayish pollinose with a variable degree of brown to tan pattern which may be extensive or much less developed; the most obvious patterned area is a central brown longitudinal stripe anteriorly, bordered by gray marks, the stripe becoming broader behind suture and then narrowing a bit to scutellum; other brownish areas may be present and other surfaces may be light tan rather than gray. Dorsal surfaces of humeri and disc of scutellum usually noticeably whitish to silvery pollinose, the scutellar edges and especially the lateral bases quite dark brown. Pleurae grayish with brown areas around mesopleural bristle and along lower edge of mesopleura. The single pair of postsutural dorsocentrals nearly aligned with strong interalars; acrostichal hairs sparse, irregular, usually with 1-2 pairs in sutural region somewhat enlarged.

Legs dark, blackish with grayish pollen; tarsi dark. Abdomen dark brown with thin grayish pollinosity, with browner areas basally on tergites, and, to a smaller extent, laterally on anterior tergites. Wing pattern pronounced; wings dusky, clouded over both crossveins; marginal cell not spotted. Costal index 4.0-4.1; fourth vein index about 1.4; fourth and fifth veins fail to reach margin.

Body length, 2.0 mm. (♂) to 2.5 mm. (♀); wings, about 2.0 mm.

Holotype, Montebello, Los Angeles County, California, March 14, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 49, all from California as follows: Montebello, Saugus (Los Angeles County); Dark Canyon (Mt. San Jacinto, Riverside County); Kernville (Kern County); Corona del Mar (Orange County). Collections were made in March and April except at Dark Canyon (July). The species occurs mostly on moist sand along streams.

Scatophila bisignata Cresson

Scatophila bisignata Cresson, 1935. Tr. Amer. Ent. Soc. 61:370.

The species was described from five specimens from Washington. We have seen a single female specimen from Uniontown, Washington (June) in the U. S. National Museum collection. On this individual the presutural dorsocentrals are quite distinct and the large basal white spot in the marginal cell is unmistakable.

Scatophila carinata new species

A dull brown pollinose species with indistinct markings, the black abdomen shining apically, and the male face with a haired protuberance.

Male face: lowly convex, with an elongate median carina-like ridge, narrow, black, hairy, extending dorsally a little less than half the distance

to the level of the antennal bases, extending downward to oral margin, the latter with two stout bristles on each side. Face brownish, the foveae lighter gray. Female face lowly convex, the foveae rather prominent; brown, with gray areas in foveae; oral margin with about six bristles, the middle pair smaller, the face with a large and a small pair of diverging setae below interfoveal hump, the larger pair placed nearer oral margin than in most species.

Front dull, the large frontal triangle and orbits brown, other areas blackish; antennae brown, without unusual hairing, the arista dark with short pubescence. Narrow parafacial area and cheek gray, the latter about half as wide as width of third antennal segment in the male, a trifle broader in the female. Palpi brown.

Mesonotum and scutellum dull brown pollinose with faint, indistinct grayish markings, more pronounced in the female; on both specimens there is a narrow gray stripe in midline; one pair of postsutural dorsocentrals nearly aligned with the strong interalars; acrostichals in two sparse rows, none of them outstanding. Pleurae dull brown pollinose, grayish on upper sternopleura. Halteres pale.

Legs dull black, the tarsi a little paler. Abdomen black, evenly and thinly brownish dusted except on fifth tergite which appears shining black from most angles. On the male the large genital plate is strongly flattened and has a strong median ridge; it does not seem to be an abnormality and may be characteristic for males of this species.

Wings dark with indistinct pattern, the apical spot of submarginal cell scarcely visible, the median one large, the basal one less distinct and continued somewhat into marginal cell just beyond apex of first vein. Costal index about 3.7; fourth vein index about 1.3.

Body length about 1.8 mm.; wings, about 2.0 mm.

Holotype male, Ames, Iowa, March 10, 1945 (T. Polhemus; Iowa State College collection); one paratype female, Henry County, Iowa, March, 1941 (Billy Owen; Iowa Insect Survey collection).

Scatophila conifera new species

A grayish pollinose species with indistinct brownish pattern on mesonotum, the male face strongly convex, cone-shaped.

Male face: convex, lowly carinate between antennae, becoming distinctly protuberant below, the median area forming a broad, roundly pointed cone which involves the oral margin, the cone densely haired except at its highest point; the hairs on the two sides longer, those dorsal to the cone shorter and fine, the total more or less surrounding the cone except along the oral margin where there are only a few hairs. None of the hairs appear as outstanding bristles. Second antennal segment short-haired on inner side. Female face broadly convex, dull gray, with sparse hairs and bristles, 2-3 nearer oral margin more developed but lacking a stout pair of diverging setae on the hump.

Front dull gray, the large triangle faintly indicated, the less pollinose areas between orbits and triangle blacker. Antennae black, arista a bit paler apically. Parafacial area and cheek usually more silvery than face; cheek width about equals width of 3rd antennal segment. Palpi gray.

Disc of mesonotum mostly grayish pollinose, dull, with an indistinct darker brown area medianly, narrower anteriorly, wider from sutural level to behind dorsocentrals, then narrowing and becoming nearly obsolete before reaching scutellum. Disc of scutellum grayish to whitish, the margins darker when seen from above but scarcely evident when viewed from directly behind. One pair of postsutural dorsocentrals, nearly aligned with the strong interalars; acrostichals sparse, irregular, often limited to about two pairs in the sutural region. Pleurae mostly pollinose gray without definite darker markings.

Legs black with grayish pollen, tarsi black. Abdomen blackish to brownish with thin gray pollinosity. Wings dull brown with faint whitish spots, none of them outstanding. Costal index about 4.0; fourth vein index about 1.6.

Body length, 1.5 mm. (♂) to 2.0 mm. (♀); wings, about 1.8 mm.

Holotype, Weott, Humboldt County, California, July 24, 1951, deposited in the Academy of Natural Sciences of Philadelphia. Paratypes, 12, with the same data as the holotype. These specimens came from a sandy-gravelly beach area along a stream.

Scatophila cribrata (Stenhammar)

Ephydra cribrata Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad. 1843:269.
Scatophila cribrata Becker, 1896. Berl. ent. Zeit. 41:240.

Originally described from Europe, this species is now apparently holarctic in distribution. We have examined 14 specimens, from Greenland, Alaska, Northwest Territory, British Columbia, Washington, and Idaho. The face in both sexes is gray with brown discoloration, with a stout pair of diverging setae on the lower part of the carina and other bristles on the margin; the black, almost velvety, frontal areas just within the narrow orbits are quite obvious, as are the presutural dorsocentrals, although the latter are less well developed in the specimen from Idaho.

Scatophila despecta (Haliday)

Scatella despecta Haliday, 1839. Ann. Nat. Hist. 3:409.
Scatophila despecta Becker, 1896. Berl. ent. Zeit. 41:241.
Scatophila variabilis Cresson, 1917. Ent. News 28:341.

In addition to the above synonymy, Sturtevant (1923, Amer. Mus. Novit. 76:11) listed *Ephydra striata* Walker (described from Martins Falls, Canada) as a probable synonym.

The specimens included here may represent more than one species. In general, specimens from different geographical areas do not show any more variation in wing pattern and mesonotal color than is usual in other species of this genus, but we have noted that many individuals from the Pacific coastal states are thickly covered with a pale brown to ochraceous pollen which nearly obscures the grayish metallic markings, the frontal orbits and ocellar triangle are often much more strongly differentiated, and the spotted pattern of the wings is usually reduced. However, this form is not infrequently taken at the same time and place as typical *despecta,* and intermediates do occur, so that we do not feel justified in considering these individuals as representing a new species or subspecies.

This is undoubtedly the most widespread species of the genus, occurring throughout the Northern Hemisphere. We have examined about 325 preserved specimens, from Europe, Costa Rica, Lower California, British Columbia, Saskatchewan, Manitoba, and 28 states as follows: Washington, Oregon, California, Montana, Idaho, Arizona, Utah, North Dakota, Minnesota, Iowa, Nebraska, Illinois, Missouri, Oklahoma, Texas, New Mexico, Ohio, Pennsylvania, Maine, Massachusetts, Rhode Island, New York, New Jersey, Maryland, South Carolina, Alabama, and Florida. It is to be expected in the remaining states as well.

Scatophila disjuncta Cresson
Scatophila disjuncta Cresson, 1935. Tr. Amer. Ent. Soc. 61:371.

This species was described from 14 individuals from California. We have seen 16 specimens, from Peshastin, Sequim, Verlot, and Copalis, Washington (August); from Bend, Oregon (August); and from Woodlake, Tulare County, California (May). In addition we have some doubtfully determined specimens as follows: 2, Ophir, Oregon (July), taken with large numbers of *arenaria* but disagreeing with our material of that species; 2, New Mexico (Glenwood, Silver City, June), and 1, Arizona (Clover Springs, Gila County, June), these three being much darker brown on the mesonotum than is the case with the typical material.

Scatophila exilis Cresson

Scatophila exilis Cresson, 1935. Tr. Amer. Ent. Soc. 61:366.

The type locality is Colorado. We have examined 27 specimens, from Manitoba, Oregon, California, Arizona, Colorado (paratype), Oklahoma, and Lower California. Collecting dates are from March through July. The single damaged specimen from Oklahoma City is labelled, " Greenhouse; damaging verbena ".

Scatophila hesperia new species

A colorful species with highly marked wings, variegated thoracic pattern, and golden yellow face. The female is not known.

Male face: broadly flattened in middle, slightly concave, protruding anteriorly, with the anterior median portion appearing a bit membranous, this area not quite reaching the oral margin; above, between the antennae, is a small hump; face with 2-3 bristles on each side along oral margin, with small scattered hairs above them surrounding the flat area which appears mostly bare. Face pale golden yellow throughout. Second antennal segment with short hairs.

Front dull yellowish brown pollinose on the large central triangle and on orbits, leaving two wedge-shaped blacker areas anteriorly. Second antennal segment gray, the third more yellow, the arista faintly yellow and short pubescent. Parafacial area and cheek more gray than face, the cheek at its narrowest point scarcely as wide as width of third antennal segment. Palpi yellowish, contrasting with the dark proboscis.

Mesonotum with complex pattern of dark brown, tan, and silvery gray areas; scutellum with a well-defined basal triangle of silvery gray, otherwise brown except for a minute gray spot at apex; margins brown, the basal lateral corners appearing black when seen from above but are brown when viewed from behind and the side. One pair of postsutural dorsocentrals, nearly aligned with the strong interalars; acrostichals sparse, irregular, with 2-3 bristles at about the sutural level more outstanding. Pleura gray pollinose with brown areas around mesopleural bristle and along lower edges of meso- and pteropleura.

Legs with dark grayish coxae and femora, the tibiae not so dark, the tarsi yellow except apically. Abdomen black, distinctly shining on the well-preserved holotype, less so on the paratype. Base of wing pale yellow, including costa to basal costal break, the blade of the wing rather dark with prominent white hyaline spots, including a faint one in marginal cell just beyond apex of first vein. When seen from a strongly oblique angle, the wings show a striking iridescence. Costal index about 3.1; fourth vein index about 1.5.

Body length, about 1.8 mm.; wing. 1.9 mm.

Holotype, Pasadena, Los Angeles County, California, March 20, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

One paratype, in the U. S. National Museum collection, labelled, "Centr. Calif.; McGregor and Munger; subm. by B. L. Boyden, Whittier, Calif.; Lot No. 39-1376; No. 6." The holotype was taken along a small sandy beach along a stream near the edge of Pasadena; the paratype is badly rubbed, dirty, and broken, but there is no doubt as to its identity.

Scatophila hirsuta new species

A dark brown species with reduced mesonotal pattern, often with a rusty red color; legs black; abdomen brown pollinose; wing spots fairly distinct.

Male face: flat to a bit concave in middle, this area continued to oral margin, the latter protruding a little and rounded as seen from above; facial hairs mostly in two large clusters in which 2-3 are about as long as reclinate orbital; small interantennal carina densely clothed with fine hairs; face brown to reddish brown, noticeably paler in foveae. Female face lowly convex, brownish, with a pair of diverging setae placed low on carina, the face otherwise with scattered bristles and 2-3 stronger bristles on oral margin on each side.

Front with large median triangle and orbits dull rusty brown, leaving two black anterior triangular areas which are almost velvety in some specimens. Antennae black; anterior orbits just lateral to antennae with whitish pruinose spots when viewed from above; parafacial area and cheek gray, the cheek width a little less than width of third antennal segment. Palpi dark.

Mesonotum dark brown, a lighter pattern nearly obscured; the median anterior stripe blackish becoming dark brown posteriorly; pale areas which are, in most species, present on each side of the median stripe are here very faint; a pruinose area on upper surface of humerus. Pleurae mostly rusty brown, less pollinose over lower sternopleura. Halteres pale. One pair of postsutural dorsocentrals, nearly aligned with interalars; acrostichals irregular with 1-2 pairs in sutural region somewhat enlarged.

Legs black, the hind tarsi often paler basally. Abdomen black with thin brownish pollen. Wings with fairly conspicuous pattern, the anterior crossvein rather heavily clouded, the apical white spot of submarginal cell usually distinct. Costal index 3.7-3.8; fourth vein index about 1.4.

Body length, 2.0-2.2 mm.; wing, about 2.0 mm.

Holotype, Rustler Park, Chiricahua Mountains, Arizona, June 11, 1951, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 14, from the type locality, and from Clover Springs (NW corner of Gila County), Arizona (June). In both localities

the specimens were taken along small streams where they traversed rather flat, cleared areas.

Scatophila hirtirostris new species

A black species with reduced wing spots, little mesonotal pattern, and shining black abdomen. Known only from two males from Alaska.

Male face: brown, the cheeks a bit grayish; with a stout median projection ending below at the oral margin, the nose-like prominence nearly two-thirds as large as the third antennal segment and nearly completely clothed with numerous fine hairs. Two stout oral bristles on each side of the prominence.

Front densely brown pollinose, the orbits only slightly differentiated; antennae black, the second segment with only a few short hairs. Proboscis and palpi brown.

Mesonotum brown, rather evenly and densely brown pollinose, the pattern of grayish markings nearly obliterated; scutellum of the same color, with at most a small gray area near base. Pleura brown pollinose, more strongly so on meso- and pteropleura; halteres pale. One pair of postsutural dorsocentrals, nearly aligned with the strong interalars; acrostichals sparse, scattered in two irregular rows with about 4-5 hairs in each row, those at the sutural level not much stouter than the others.

Legs black, the tarsi only slightly paler. Abdomen all black, noticeably shining, especially apically. Wings dusky with a few poorly defined whitish areas, none of them outstanding. Costal index about 3.1; fourth vein index about 1.4.

Body length, about 1.8 mm.; wing, 1.8 mm.

Holotype and one paratype, in the U. S. National Museum collection, with identical labels as follows, "Steese Hwy, Alsk.; MP 37; IX-3-48; G. Jefferson; Alaska Ins. Project." The Steese Highway runs northeast from Fairbanks.

Scatophila mesogramma (Loew)

Scatella mesogramma Loew, 1869. Berl. entl. Zeit. 8:42.
Scatophila mesogramma Sturtevant, 1923. Amer. Mus. Novit. 76:12.

The species was described from Newport, Rhode Island. We have examined nine specimens, from Massachusetts and Maryland (the latter a Cresson-determined specimen). On Cape Cod. Mass., this species is usually a beach form, but it also occurs around sandy fresh-water ponds. Collecting dates are May to July.

Scatophila ordinaria new species

A dull brown species without noticeable mesonotal pattern; faces of the two sexes of about the same shape; two rather regular rows of uniformly small acrostichal hairs.

Front dull brown, densely pollinose throughout; reclinate orbitals placed rather far forward, at least three times as far from the inner verticals as these are from the outer verticals. Antenna and arista blackish, the arista short pubescent. Face of female cinereous gray with slight tan color, or it may be more extensively brownish, convex in middle, depressed toward parafacial grooves leaving a fairly distinct carina above; facial hairs sparse, with about two bristles on oral margin on each side and with a pair of small divergent bristles on about middle of face just below a series of diverging hairs along carina. Male face less strongly convex, the carina and foveal depressions less distinct, and lacking a pair of diverging setae near middle. Parafacial area and cheeks gray—even when the face is brownish; cheek width less than width of third antennal segment, a bit narrower in male than in female. Proboscis brownish, palpi more yellowish.

Disc of mesonotum and scutellum dull brown pollinose like the front, the only indications of a mesonotal pattern being faint grayish marks anteriorly just within the dorsocentral lines, and a faint median grayish area on scutellum. One pair of postsutural dorsocentrals; arostichal hairs small, thin, in two rather regular rows extending posteriorly nearly to scutellum. Humeri and pleurae more gray than the mesonotum, with faint brownish discoloration around mesopleural bristle and sometimes along lower edge of mesopleura. Halteres pale.

Coxae and femora dark, tibiae sometimes equally dark but more often a bit paler, the tarsi yellow except apically. Abdomen black with thin gray pollen, the last tergites in both sexes a bit more shining black. Wings dusky with the pattern of whitish areas distinct but not prominent. Costal index about 4.0; fourth vein index about 1.5.

Body length, 1.5-1.8 mm.; wing, 1.8-2.0 mm.

Holotype, Austin, Texas, April 16, 1953, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 69, from Baton Rouge, Louisiana; Austin, Bastrop, Galveston, Texas; Fairbanks, Arizona; Antioch, Madera, Woodlake, Kernville, Pasadena, Montebello, Vidal, Palo Verde, Baldwin Peak, California; and Verlot, Washington. At the lower elevations collecting dates are from March through October. Although one specimen is labelled "cauliflower", and one "swept from Manure heap", we have found the species usually associated with muddy areas along streams and lakes.

Scatophila picta new species

A highly marked species known only from a male from Alaska.

Male face: flattened medianly, grayish with some brownish color between antennae and a prominent brown area along oral margin on each side, these two containing all of the larger facial hairs and bristles, the rest of the face with small scattered hairs; oral margin with two stout bristles on each side.

Front tannish brown pollinose, grayish near antennae, and with some indistinct blackish color on anterior orbits and lateral to antennal bases; antennae brown, 2nd segment clothed with sparse long hairs on inner side. Cheeks gray, their width nearly equal to width of the third antennal segment. Proboscis grayish brown, palpi yellow.

Disc of mesonotum intricately marked with light brown, darker brown, and grayish areas forming a complex pattern in which the most noticeable feature is the gray pollinose area around the base of each interalar, the base of the bristle itself, however, arising from a small brown dot. Scutellum darker brown with fairly distinct basal and apical gray areas. Pleurae mostly gray pollinose with a prominent brown area on upper third of mesopleura including the bristle, and another along lower edge of mesopleura and pteropleura including a small part of the upper edge of the sternopleura. One pair of strong postsutural dorsocentrals; acrostichal hairs sparse, in about two rows of 3-4 hairs each, the two pairs at sutural level stronger than the others.

Legs brown with thin pollinosity, the tarsi rather yellowish but darker apically. Halteres pale. Abdominal tergites mostly dull brown, pollinose dorsally, but showing fairly distinct grayish apical margins laterally. Wings dark with well-developed, complex pattern of light areas; marginal cell with 3-4 white areas; costal cell yellowish, the costa pale yellow up to the basal costal break; apex of first vein and anterior crossvein darkened. Costal index 3.6; fourth vein index 1.3-1.4.

Body length, 1.8 mm.; wing, 2.0 mm.

Holotype, male, in U. S. National Museum collection, labelled: Matanuska, Alaska, Oct. 2, 1945; Rotary trap coll.; J. C. Chamberlain. Matanuska is located about 50 miles northeast of Anchorage, just off the Glenn Highway.

Scatophila pulchra new species

A highly marked species with complex mesonotal pattern; median white area of submarginal cell with a dark center; related to *picta* and *hesperia* in having the wing base yellow and the scutellum with a basal gray triangle.

Male face: flat to very slightly convex with rather distinct foveae, mostly golden yellow and contrasting with the silvery gray foveae, parafacial area and cheeks; face sparsely haired, usually with about three larger bristles on each side; one on oral margin, one lateral to this and farther from

margin, and one dorsal to the last. Second antennal segment with short hairs on inner side. Female face more convex than in the male, of the same color, with a pair of diverging setae on interfoveal hump and, on each side, about 2-3 bristles on oral margin and often an additional one higher on face.

Front densely brown pollinose, the triangle not clearly marked; reclinate orbitals at least twice as far from inner verticals as these are from outer verticals. Antennae yellowish, upper edge of third segment darker; arista black. Cheek scarcely as wide as width of third antennal segment. Palpi yellow.

Mesonotum with a complex pattern of brown, tan, and silvery gray areas, mostly appearing brownish with distinct gray areas posteriorly between each dorsocentral and interalar, fused posteriorly and then continued on over the scutellum as a distinct basal triangle; scutellum, except for the triangle, dark brown on disc, the lateral edges appearing much blacker when viewed from above and behind; there is sometimes a small gray spot on scutellar apex. One pair of postsutural dorsocentrals nearly aligned with the strong interalars; acrostichals sparse, in two irregular rows, with about two pairs in the sutural region enlarged. Pleurae gray with extensive brown areas over upper third of mesopleura and across lower edges of meso- and pteropleura.

Legs usually all yellow except for darker apical tarsal joints, but the femora are sometimes a bit darkened. Abdomen dark brown, the apical tergites somewhat shining, the basal ones more gray pollinose; all tergites with fairly distinct silvery gray pollinose areas laterally. Wings with yellow bases, the disc dark with a conspicuous pattern of whitish areas, the large, quadrate median area in submarginal cell with a dark central area which may be small or extensive. Both crossveins distinctly clouded. Costal index about 4.0; fourth vein index 1.2-1.3.

Body length, 2.0-2.3 mm.; wing, about 2.1 mm.

Holotype, Pasadena, California, March 16, 1949, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 33, from Pasadena, Palm Canyon, California; Fairbanks, Ramsey Canyon (Huachuca Mountains), Swift Trail (Mt. Graham, south of Safford), Arizona; Silver City, New Mexico. Collecting dates are March (all California records) and June (all other records). We have usually taken the species on gravelly-sandy areas along fresh-water streams.

Scatophila rubribrunnea new species

A brown species, often with a faint rusty-red tint, with distinct mesonotal pattern, semi-conspicuous wing spots, dark legs, and dark palpi.

Male face: shallowly concave in middle forming a small to large membranous area which does not included the oral margin, the margin strongly

rounded to angular when seen from above; with 2-3 stronger bristles on oral margin on each side and above these sparse shorter hairs, scarcely giving the appearance of a cluster; face mostly tan to brown, fovea paler; 2nd antennal segment thickly short-haired on inner side. Female face weakly convex, brownish, with rather distinct foveae; with 3-4 stronger bristles along oral margin on each side and a weak pair of diverging setae placed rather low on the interfoveal hump.

Frontal triangle and orbits dull dark brown, leaving two triangular areas anteriorly, sometimes poorly differentiated, more blackish in color. Antenna and arista dark brown to black. Reclinate orbital about twice as far from inner vertical as the latter is from the outer vertical. Parafacial area and cheek silvery gray, the cheek width a trifle less than width of third antennal segment. Palpi dark.

Mesonotum and scutellum dark brown, often with a rusty-red tint, the pattern of lighter gray areas easily seen but not always well-defined; the anterior median stripe is of the same color as the other brown areas and is bordered on each side by elongate gray areas; scutellum usually with a grayish median stripe from base to apex. One pair of postsutural dorsocentrals; acrostichals sparse, irregular, with 1-2 pairs in sutural region moderately enlarged. Meso- and pteropleura mostly brown pollinose, sternopleura mostly gray.

Legs black, the tarsi rarely paler. Abdomen dark brown with brownish pollen, the posterior tergites a bit glossy when seen from behind; tergites with some gray near posterior lateral angles. Wings dusky with the pattern of spots evident but not conspicuous; the median white spot of submarginal cell narrow, the apical spot quite faint. Costal index apparently variable, usually between 3.3-3.7; fourth vein index 1.4-1.5.

Body length, about 2.0 mm.; wing about 2.1 mm.

Holotype, Pasadena, California, March 15, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 53, all from California; Kernville, Pasadena, Buckhorn Flat (Los Angeles County), Corona, Dark Canyon (Mt. San Jacinto), Mt. Waterman. Collecting dates are from March through July.

In addition to the above, we have the following specimens which we are not considering as types: 1, Lake Wenatchee, Washington; 4, Bend, Oregon: 2, Daniels, 1, Kemmerer, Wyoming; 1, Matanuska Alaska. The specimen from Alaska is a female, and agrees quite well with the type series. Males of the other localities named all have the membranous area of the face quite large, oval, occupying nearly the entire face; these may represent another species but we are inclined to consider them as more extreme variants of the typical facial structure.

Scatophila unicornis Czerny

Scatophila unicornis Czerny, 1900. Wien. ent. Zeit. 19:205.
Scatophila tuberculosa Cresson, 1935. Tr. Amer. Ent. Soc. 61:368.

Cresson described *tuberculosa* from Missouri; we believe the synonymy with *unicornis* to be certain since Bolwig (1940, Proc. Roy. Ent. Soc. London (B) 9:129) redescribed this European species in great detail from specimens he found in a greenhouse, living on wet stones and wet flowerpots in very moist places apparently feeding on diatoms. Bolwig stated that the larvae cover themselves with small stones and pellets of feces, this covering being retained on the puparium.

We have examined 22 specimens, from Pasadena, California (March); Montecito, Santa Barbara County, California (U. S. National Museum collection; labelled "from Glass House"); Toronto, Ontario, Canada (U. S. National Museum collection; labelled "in greenhouse"). All 18 of the specimens we have captured came from a small sandy area along a stream near the city limits of Pasadena; however, it seems likely that its greenhouse habits have aided in its wide dispersal.

Scatophila variofacialis new species

A brown species with noticeable glossiness on mesonotum and on female face; abdomen shining black; legs black with yellowish tarsi.

Male face: in the series of 14 specimens which we believe represent this species, three variations in the structure of the male face occur; the first, which we are calling "typical", occurs in four males (including the holotype) from Washington, California, and Alaska; a slight modification of this occurs in two males from Alaska; a more extreme modification occurs in a single male from Washington and we are not including this specimen in the paratypic series. The "typical" male face is as follows: oral margin extended anteriorly forming a protruding "upper lip" to the face, medianly with an elongate sunken depression with low elevations on each side which taper gradually into the normal facial outline; on each of the elevations are thick clusters of hairs, the two groups converging somewhat behind and in front, giving the appearance of an incomplete circlet of dense hairs surrounding the median depression; oral margin with two bristles on each side of the median area; face mostly light brown, paler in the shallow foveae.

In the two males from Alaska representing a slight modification, the two hairy clusters are thinner and there appears to be a minute pit-like depression near the anterior end of the median depression, but this pit, when viewed from certain angles seems more like a tiny raised knob, due to effect of shadows. The most extreme variation (one male from Washington) has

the two lateral haired areas crowded onto much more strongly pronounced elevations and there is a distinct haired pit at the anterior edge of the median depression, but this pit, as in the above, seems to be an elevated region when seen from certain angles—so that when viewed from directly above, the face seems to have three hairy knobs near the anterior margin.

Female face: convex brown, semi-shining, with shallow foveae; with about three bristles on oral margin on each side and a very strong pair of diverging bristles medianly at about the level of the lower edge of the foveae; there are usually small divergent hairs just above the stout bristle pair.

Front dull brown pollinose, grayish anteriorly, the orbits not much differentiated. Parafacial area and cheek more grayish, the cheek width half or a little more than half the width of a third antennal segment. Palpi light brown; antennae brown, including arista.

Mesonotum dark brown, thinly pollinose but appearing slightly shining from most angles, the reduced grayish markings often a bit greenish to tannish in color; scutellum dark brown, a grayish apical area faintly indicated. Pleura dark brown pollinose, more gray over sternopleura. One pair of postsutural dorsocentrals nearly aligned with the stout interalars; acrostichals in two irregular rows of about 8-10 hairs per row, those at about sutural region not much enlarged. Halteres pale.

Legs black, the mid and hind tarsi yellowish, especially basally. Abdomen black, anterior tergites thinly dusted, apical ones distinctly shining. Wings dusky with only moderately developed white spots. Costal index 3.0-3.2; fourth vein index about 1.5.

Body length, 1.7-2.0 mm.; wing, about 2.0 mm.

Holotype, male, with "typical" face, Carson, Skamania County, Washington, August 6, 1951, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 11, from Sequim, Vancouver, Washington (July-August); Carlton, Oregon (July); Berkeley Hills, Alameda County, California (April); Bethel, Matanuska, Fairbanks, Alaska (May-July, September). On some of the Alaskan specimens the mesonotal glossiness is scarcely evident. In addition to the above, we have a single male from Sequim, Washington, which has the extreme facial modification, and a single damaged individual from Tennessee Pass, Colorado (10,240 feet; July), which cannot be identified with certainty.

Scatophila viridella new species

A dull tan species with a somewhat olive-greenish tint; tarsi and palpi rather pale; abdomen pollinose.

Male face; with a broad flat median area which reaches oral margin, slightly elevated near margin on each side, each elevation with a strong

cluster of bristles and hairs, the lower ones longest, with 3-4 bristle-like; face otherwise with short hairs; face pale tan to grayish-tan, a little darker in the clusters of hairs; 2nd antennal segment with thick long hairs on inner side. Female face weakly convex, with shallow foveae, and with sparse black hairs and bristles of which 2-3 on each side along oral margin are stronger, and 1-2 pairs of diverging setae on interfoveal hump; face grayish tan.

Front dull brown pollinose, the triangle and orbits only faintly differentiated; antennae brown; parafacial area and cheek gray, the cheek width very slightly less than width of a third antennal segment. Proboscis dark, palpi yellowish.

Mesonotum tan with indistinct grayish marks, the whole surface usually with an olive-greenish tint; scutellum with basal and apical gray areas; pleura mostly gray, with brown discoloration along upper and lower edges of mesopleura. One pair of postsutural dorsocentrals, nearly aligned with the stout interalars; acrostichals sparse, in two rows of 5-7 hairs per row, with 1-2 pairs in sutural region a bit larger.

Legs brown with gray pollen, the tarsi usually yellowish at least basally and tibiae sometimes paler at base. Abdomen dark brown with considerable pollinosity, more grayish laterally. Wings dusky, the pattern of white spots evident but not pronounced; wing base yellowed. Costal index about 4.0; fourth vein index about 1.5.

Body length, 2.1-2.3 mm.; wing, about 2.2 mm.

Holotype, Montebello, Los Angeles County, California, February 9, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, 57, from Montebello, Pasadena, and Corona, California (January to March). In addition we have 14 somewhat atypical specimens from Verlot, Vantage, Washington; Fairbanks, Arizona; and Chadron, Nebraska. We are not including these in the type series.

SETACERA

Setacera Cresson, 1930. Trans. Amer. Ent. Soc. 56:116.

The genotype is *Ephydra pacifica* Cresson.

The species of this genus seem to be limited to fresh water, especially of lakes, rather quiet pools and slow-moving streams. They are very active and, when disturbed, fly exceedingly close to the surface of the water and alight on the water far from shore. Thus they are not ordinarily taken in general sweeping and each specimen must usually be individually stalked. The result is that they

are not numerous in collections. This fact, plus the absence of very conspicuous specific differences in the females, has made the genus difficult to deal with.

SETACERA: *Key to the Nearctic Species*

1. Males 2
   Females 7
2. Genital plate (on ventral side of abdomen, anterior to anal plates) with a deep median longitudinal furrow 3
   Genital plate with at most a faint apical indication of a median furrow .. 4
3. Fifth tergite broadly truncate posteriorly, its posterior border over half its anterior one, its posterior corners tumid; first and second coxae not unusually hairy; no conspicuous tufts of hairs at apices of second and third tibiae ..... **aldrichi** Cresson
   Fifth tergite narrowed posteriorly, its posterior margin about one-third its anterior, the posterior corners not tumid; first and second coxae with areas bearing dense long, fine hairs; second and third tibiae densely haired on flexor sides at apices, these hairs shorter than those of *needhami* ..... **pacifica** (Cresson)
4. Second tibia with a distinct apical tuft of hairs; first and second coxae with areas containing dense long, fine hairs; western species 5
   No conspicuous apical tufts of hairs on tibiae; coxae without unusually long fine hairs; eastern species 6
5. Fifth tergite strongly narrowed apically, its posterior margin about one-third its anterior; hind tibiae with an apical tuft of hairs **needhami** Johannsen
   Fifth tergite not so strongly narrowed, its posterior margin about one-half its anterior; hind tibia without apical tuft ..... **durani** Cresson
6. Fifth tergite about as long as fourth; abdomen somewhat shining **atrovierns** (Loew)
   Fifth tergite nearly twice as long as fourth; abdomen pollinose **pilicornis** (Coquillett)
7. With seven tergites clearly visible from a dorsal view 8
   The seventh tergite not visible from above, or at most only as a narrow line 9
8. Anal plates enlarged, directed downward, their length (vertical axis) greater than their breadth ..... **needhami** Johannsen
   Anal plates broader than long ..... **durani** Cresson
9. Antennal foveae somewhat grayish pollinose, with less blue-green shininess than interfoveal part of face; eastern species 10
   Foveae about as blue-green shiny as interfoveal area; western species ... 11
10. Abdomen cinereous ..... **pilicornis** (Coquillett)
    Abdomen more or less shining **atrovirens** (Loew)
11. The swollen area lying between the haltere and the calypter bears a thorn-like papilla above ..... **pacifica** (Cresson)
    Without a papilla on the swollen area described ..... **aldrichi** Cresson

Setacera aldrichi Cresson

Setacera aldrichi Cresson, 1935. Tr. Amer. Ent. Soc. 61:348.

The type locality is Idaho. We have examined 16 specimens, from Wyoming, Idaho and California (El Dorado and San Diego counties).

Setacera atrovirens (Loew)

Ephydra atrovirens Loew, 1862. Mon. Dipt. N. Amer. 1:169.
Setacera atrovirens Cresson, 1930. Tr. Amer. Ent. Soc. 56:116.

This species was described from the "Middle States"; it was recorded from New Hampshire, Massachusetts, and Connecticut by Johnson. We have examined 12 specimens, from Saskatchewan, New York, Pennsylvania, Michigan, Illinois, Minnesota, Iowa, Kansas, and Wyoming.

Setacera durani Cresson

Setacera durani Cresson, 1935. Tr. Amer. Ent. Soc. 61:348.

The type locality is Los Angeles County, California. We have examined 38 specimens, from Oregon, California (Alameda, Kern, San Bernardino, Los Angeles, and San Diego counties), Colorado, Arizona, and Texas (Fort Davis).

Setacera needhami Johannsen

Setacera needhami Johannsen, 1935. Mem. Cornell Univ. 177:53.
Setacera needhami Cresson, 1935. Tr. Amer. Ent. Soc. 61:347.

This was described from Orange County, California. We have examined 35 specimens, from Alameda, Los Angeles, and San Bernardino counties, California.

Setacera pacifica (Cresson)

Ephydra pacifica Cresson, 1925. Ent. News 36:167.
Setacera pacifica Cresson, 1930. Tr. Amer. Ent. Soc. 56:116.

The type locality is Vancouver Island, British Columbia. We have seen four specimens, from Washington, and western Nebraska.

The thorn-like papilla on the postnotum, referred to in the last couplet of the above key, occurs in both sexes of *pacifica,* and in no other species that we have seen. Our identification of this species is on geographical grounds, since the characteristic thorn is not

mentioned in the description, and we have not seen the type. We have seen two specimens, determined as *pacifica* by Cresson, that we identify as *durani.*

Setacera pilicornis (Coquillett)

Ephydra pilicornis Coquillett, 1902. Jour. N. Y. Ent. Soc. 10:184.
Setacera knabi Cresson, 1935. Tr. Amer. Ent. Soc. 61:346.

The two names here were both applied to material from the Miami area of Florida, and a study of the literature suggested that they applied to the same species. Both types are listed as being in the U. S. National Museum; we therefore asked Dr. W. W. Wirth to compare them. He was unable to find the type of *knabi,* but reports that the type of *pilicornis* agrees with the rather brief description of *knabi.* Dr. Wirth also believes that there is probably only one species here.

We have examined eight specimens, all from Florida (Hillsboro and Polk counties).

Subfamily Napaeinae

BRACHYDEUTERA

Brachydeutera Loew, 1862. Mon. Dipt. N. Amer. 1:162.

There is a single Nearctic species of this genus, which is the genotype.

Brachydeutera argentata (Walker)

Notiphila argentata Walker, 1856. Ins. Saund. 5:407.
Brachydeutera dimidiata Loew, 1862. Mon. Dipt. N. Amer. 1:163.
Brachydeutera argentata Aldrich, 1905. Cat. N. Amer. Dipt., p. 628.

One of us (A.H.S.) saw the type of *argentata* in the British Museum in 1922, and confirmed the synonymy of *dimidiata.* We have since seen 114 specimens, from New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Illinois, Iowa, Missouri, Kansas, Virginia, Florida, Alabama, Louisiana, Texas, California (San Mateo to San Diego counties), Cuba, Mexico, (Guadalajara), and Costa Rica. The species is also reported from Maine (Johnson), the District of Columbia (Loew), Argentina (Cresson), Brazil, Bolivia, and Paraguay (Williston), the Canary Islands (Becker), and, with some question, from Austria (see Cresson, 1930. Tr. Amer. Ent. Soc. 56:105).

This species is sometimes found in numbers, standing on the surface of stagnant pools, or flitting about them. It is, however, of rather transient and local occurrence. It has been taken at lights in Florida and Louisiana.

EUTAENIOTUM

Eutaeniotum Oldenberg, 1923. Deutsch. ent. Zeit., p. 315.

This genus has not previously been recorded as American. It has apparently been recognized only in the case of a single species, *E. olivaceum* Oldenberg, collected at Berlin, Germany. There is a Nearctic species that seems to us best placed here, though we have not seen *E. olivaceum.*

The genus is keyed, by Becker and Seguy, to the neighborhood of *Napaea,* from which it is distinguished by the absence of orbitals and the presence of a single " dorsocentral " (on our terminology this bristle is the interalar, i.e. *Eutaeniotum* has no dorsocentrals whereas *Napaea* may have from one to three). The genus also resembles *Hyadina* and *Pelina;* from the former it differs notably in the long second vein (costal index over 3.0), and from the latter by the absence of well-developed orbital bristles.

The only species we have seen is the following.

Eutaeniotum guttipennis (Stenhammar)

Telmatobia guttipennis Stenhammar, 1844. Handl. K. Svensk Vet.-Akad., 1843, p. 212.
Pelina guttipennis Becker, 1896. Berl. ent. Zeit. 41:199.

We have seen a single specimen, determined by Wirth as *Pelina guttipennis,* and also bearing an earlier label in a different hand with the same determination. The specimen agrees with the descriptions of this European species; we have not seen European material, however. Becker recognized the species as aberrant in *Pelina,* but did not refer it to *Eutaeniotum,* with which the American specimen agrees well. Neither the genus nor the species seems to have been previously recorded as American; accordingly, the following brief description is presented:

Black; face whitish dusted. Mesonotum with a distinct gray stripe inside each dorsocentral line. Broad frontal orbits velvety. Abdomen shining, only microscopically sculptured.

Wings dusky, with an indistinct whitish spot on each side of the posterior crossvein and another one anterior to the fourth vein midway between

the crossveins. Costal index nearly 4.0; fourth vein index about 1.0. Clypeus resembles that of typical *Napaea*.

Length 2.25 mm.

One specimen: Franconia, New Hampshire (Mrs. Slosson, U. S. National Museum collection).

GASTROPS

Gastrops Williston, 1897. Kans. Univ. Quart. 6:3.
Ventrops Grossbeck, 1912. Bull. Amer. Mus. Nat. Hist. 31:378.

The genotype is *G. niger* Williston. We have little to add to the account of the genus given by Cresson (1949, Trans. Amer. Ent. Soc. 74:250); it is included here for the sake of completeness and in order to report a few new distribution records.

The species are to be found in muddy areas. The two Nearctic species may be separated as follows:

1. Wings spotted; second vein with a large apical branch **nebulosus** Coquillett
   Wings hyaline, not spotted; second vein not branched ....**niger** Williston

Gastrops nebulosus Coquillett

Gastrops nebulosus Coquillett, 1900. Canada. Ent. 32:34.

Cresson recorded 32 specimens, from Connecticut, New Jersey, Michigan, Virginia, North Carolina, South Carolina, Georgia, and Florida. We have examined 36 specimens, from Massachusetts (Rochester, Woods Hole), New Jersey, Virginia, Georgia, Florida, Tennessee (Memphis), Missouri (Perryville), and Texas (Ottine, Livingston, in the eastern part of the state). Except for Cresson's record from Michigan, these localities are all in or near the coastal plain.

Gastrops niger Williston

Gastrops niger Williston, 1897. Kans. Univ. Quart. 6:3.

Cresson recorded seven specimens from extreme southern Texas, and (in 1918) listed it from Costa Rica. Williston's material came from Brazil. We have examined a total of 24 specimens: four from southern Texas, one from Costa Rica, 17 from the states of Vera Cruz and Tabasco, Mexico, and two from northern Brazil. One of our Texas specimens is also included in Cresson's list.

HYADINA

Hyadina Haliday, 1839. Ann. Nat. Hist. 3:406.
Axysta Haliday, 1839. Ann. Nat. Hist. 3:406.
Lytogaster Becker, 1896. Berlin ent. Zeit. 41(2):202.

The three genera listed here are usually considered as distinct. We have examined a total of 16 species of the group (some of them Palaearctic or Neotropical), including all three genotypes, and are unable to find any satisfactory generic distinctions.

Axysta (genotype: *Ephydra cesta* Haliday) differs from the rest of the group in that the marginal vein reaches only to the third vein. As Cresson (1949) observed, it is otherwise quite similar to *Lytogaster;* in fact, *A. cesta* was described by Cresson as *Lytogaster extera,* and it is listed under both names in the paper cited. Others have made the same mistake, as did we, for example, in early determinations.

Lytogaster (genotype: *Philygria abdominalis* Stenhammar) is considered to differ from *Hyadina* (genotype: *Notiphila guttata* Fallén) in the structure of the abdomen, but as Cresson (1949) has pointed out, that character is difficult to apply. Our own experience has been that the character is sometimes rather indefinite, and that it is not correlated with other specific differences that we have used (presence or absence of outer verticals or of velvety scutellar angles, development of the clypeus). Seguy (1934) uses the presence or absence of the supraalar bristle for this separation; we find this bristle clearly present in all species of the group that we have examined, except possibly *abdominalis.* In this species all the bristles are small, and it becomes difficult to decide whether to consider the small hairs that are present as being bristles. In any case, there is clearly no generic character here. Becker (1926) says there are no dorsocentrals in *Lytogaster,* two pairs in *Hyadina.* We find a single pair of interalars in all the species we have seen; only *longicornis* has, in addition, a pair of true postsutural dorsocentrals.

The group includes rather diverse species, but we have not been able to devise a separation, even into subgenera, that seems natural. The alternatives have seemed to be to recognize five or more genera or subgenera, or to leave the whole assemblage in a single group. We have preferred the latter course.

The name to be applied is open to some question. Coquillett (1910) would use *Hydrina* Desvoidy (1930); the reasons given by Cresson (1949) for rejecting this use seem to us valid. It must be admitted that it is confusing to have two such similar names in use at present, when in the past they have been considered synonyms. One possibility would be to use *Axysta* for the whole group, since it was described on the same page as *Hyadina* (though *Hyadina* has line priority). We have not adopted this course since it seems to us likely to lead to still more confusion.

The members of this genus, like those of *Pelina* and *Hydrina,* are most often taken by sweeping, frequently in somewhat drier places than are characteristic for many Ephydridae. We have never found dense populations of any species.

HYADINA: *Key to the Nearctic Species*

1. Costa reaches only to or barely beyond end of third vein 2
   Costa reaches end of fourth vein 3
2. Arista and third antennal segment black; a strong orbital bristle present **cesta** (Haliday)
   Arista white; third antennal segment pale below; no orbitals **bradleyi** (Cresson)
3. Inner verticals present, outer verticals absent 4
   Both inner and outer verticals clearly present 10
4. Scutellum with basal angles velvety [4] 5
   No velvety areas on scutellum 6
5. Legs mostly brownish yellow; mesonotum granulose but slightly shining; crossveins separated by a distance about twice the length of posterior crossvein; second vein unbranched .....**subnitida,** n. sp.
   Femora and tibiae more brown; mesonotum densely granulose, not at all shining; crossveins separated by a distance not over 1½ the length of posterior crossvein; second vein branched near its apex **corona** (Cresson)
6. Second vein bent strongly anteriorly at apex, ending basal to level of posterior crossvein .....**neglecta,** n. sp.
   Second vein not strongly bent, ending beyond the level of the posterior crossvein 7
7. Legs mostly black, femora and tibiae noticeably so; costal index about 1.0; clypeus visible, tongue-like 8
   Legs paler, at least tibiae extensively yellowish; costal index less than 1.0; clypeus not visible 9

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[4] The velvety basal angles of the scutellum are most easily seen if the specimen is viewed from above and behind, at an angle of about 45° from the surface of the scutellum.

8. Vertical bristles very short; black species without mesonotal stripes **abdominalis** (Stenhammar)
   Vertical bristles of usual size; mesonotum dull gray with brown longitudinal stripes ..... **gravida** Loew....a
a. Frontal triangle flat, lateral margins slightly raised to form a narrow ridge ..... subsp. **gravida** Loew
   Frontal triangle depressed on either side, leaving the ocelli and lateral margins elevated ..... subsp. **excavata,** n. subsp.
9. Femora usually dark; vertical bristles rather short; front and mesonotum faintly pollinose, rather shiny, but without obvious median pollinose stripe ..... **furva** (Cresson)
   Femora and tibiae pale; verticals longer; front and mesonotum rather heavily brown pollinose and with an evident median pollinose stripe **flavipes,** n. sp.
10. Wings short, dark brown with numerous definite white spots; costal index less than 1.0; no velvety marks at base of scutellum; mesonotum black with distinct broad gray stripes; antennae long **longicornis,** n. sp.
   Not altogether as above 11
11. Grayish brown, front and mesonotum not at all shining; no velvety spots at base of scutellum ..... **pruinosa** (Cresson)
   Black, front and mesonotum subshining; scutellum often with basal angles velvety 12
12. Crossveins white; fourth vein index less than 3.0 ..**albovenosa** Coquillett
   Crossveins brown; fourth vein index 3.0 or more 13
13. Mesonotum with more or less definite gray longitudinal marks; basal angles of scutellum velvety; abdomen shining black, smooth posteriorly **binotata** (Cresson)
   Mesonotum black, without gray stripes; angles of scutellum not velvety; abdomen less shiny, finely punctate ..... **angustata** (Cresson)

Hyadina abdominalis (Stenhammar)

Philygria abdominalis Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad. 1843:238.
Lytogaster abdominalis Becker, 1896. Berl. ent. Zeit. 41:203.

Cresson (1949) recorded three American specimens of this European species, from Canada, New York, and South Dakota. We have seen two specimens, from McLean, New York (Cornell University collection), and Drummond, Montana (Kansas University collection).

Hyadina albovenosa Coquillett

Hyadina albovenosa Coquillett, 1900. Canad. Ent. 32:34.

Cresson (1949) reported 58 specimens, from Connecticut south to Georgia and west to Manitoba and Texas. We have seen 51 specimens, from Massachusetts, New York, New Jersey, Virginia, Pennsylvania, Tennessee, Texas (west to Austin, south to Port Lavaca), Alabama, Indiana, Iowa, Minnesota, Manitoba, and Tuxpan, Mexico.

Hyadina angustata (Cresson)

Lytogaster angustata Cresson, 1934. Tr. Amer. Ent. Soc. 60:206.

This species seems to have been recorded only from the type, from Pinar del Rio, Cuba, now in the American Museum of Natural History. We seen 14 specimens, including the type, one from Porto Rico determined by Cresson, two from Cuba (Havana, Herradura), and ten from the United States (all the latter in the Kansas University collection) as follows: Okefinokee Swamp, Georgia; Alford, Branford, Hilliard, Suwannee Springs, and West Palm Beach, Florida. This species is somewhat variable, the posterior crossvein ranging from one-half to two-thirds as long as the distance between the crossveins, and the tibiae ranging from slightly brownish yellow to dark brown with paler ends. The Cuban specimens agree with Cresson's description; the series from the United States shows the full range of variation. We are inclined to suspect that *L. pallipes* Cresson (1914, Ent. News 25:248), from Costa Rica, may be an earlier name for this species, since his distinction between the two is based on the color of the legs, which we find to be variable. We have not seen undoubted specimens of *pallipes*.

Hyadina binotata (Cresson)

Hydrina binotata Cresson, 1926. Tr. Amer. Ent. Soc. 52:256.
Hyadina macquarti Cresson, 1930. Ent. News 41:80.
Hyadina binotata, Cresson, 1949. Tr. Amer. Ent. Soc. 74:253.

The synonymy of *macquarti* is on the authority of Cresson (1949), who recorded 23 specimens, from localities scattered from Alaska to California, east to Manitoba, New York and Georgia. We have seen 63 specimens, from Alaska, British Columbia, Manitoba, California, Wyoming, Arizona, New Mexico, Texas, Colorado, Minnesota, North Dakota, Tennessee, Pennsylvania, Maryland, North Carolina, and New York. Our list includes

specimens determined by Cresson and by Wirth. The species seems to be most frequent in the region between the Rocky Mountains and the Mississippi River.

One specimen, from Palo Alto, California, has the posterior crossvein somewhat longer than the distance between the crossveins, while the other material has it not much more than half as long as this distance. Since this locality is not far from the type locality of *binotata* (Berkeley), we asked Dr. K. W. Cooper to examine the type specimen, in the collection of the Academy of Natural Sciences of Philadelphia. He reports that it shows the posterior crossvein just over one half the distance in question. Dr. Cooper and Dr. W. W. Wirth have both also examined for us the type of *macquarti,* in the U. S. National Museum, and report that the posterior crossvein is there even shorter. These data show that the name *binotata* is properly applied to the widespread form, and that our Palo Alto specimen is the only unusual one. For the present we are considering this specimen a variant of *binotata,* at least until more material from the region is available.

Hyadina bradleyi (Cresson)

Axysta bradleyi Cresson, 1930. Ent. News 41:79.

Cresson (1949) recorded five specimens, from Virginia, Georgia, Illinois, and Oklahoma. We have not seen this species.

Hyadina cesta (Haliday)

Ephydra cesta Haliday, 1833. Ent. Mag. 1:177.
Axysta cesta Haliday, 1839. Ann. Nat. Hist. 3:406.
Lytogaster extera Cresson, 1924. Ent. News 35:162.

This European species was doubtfully recorded as American by Sturtevant (1923, Amer. Mus. Novit. 76:11). Cresson (1949) made the species identification but failed to realize that he had described the species as *Lytogaster extera,* so that both are listed, under separate genera, in the same paper. He reported five specimens of *L. extera;* these have been examined for us by Dr. K. W. Cooper (four, including the type, Acad. Nat. Sci. Philadelphia) and by Dr. P. J. Darlington (one specimen, Mus. Comp. Zool., Harvard). They report that in all five the costa ends at or barely beyond the tip of the third vein, and that the arista is blackish or

dark brown on all of them. These data, plus a comparison of the descriptions, leave no doubt of the synonymy as given.

For the two supposed species, Cresson (1949) recorded a total of eight American specimens, from Canada (Ontario), Massachusetts, New Jersey, Illinois, Minnesota, Washington, and Alaska. We have seen 10 additional specimens, from Massachusetts, New Jersey, Michigan, Nebraska, Minnesota, and Washington.

Hyadina corona (Cresson)

Hydrina corona Cresson, 1926. Tr. Amer. Ent. Soc. 52:256.
Hyadina corona Cresson, 1949. Tr. Amer. Ent. Soc. 74:254.

Cresson (1949) recorded five specimens, from New York, Pennsylvania, and Michigan. We have seen three specimens, from New Jersey, Pennsylvania, and Iowa.

Hyadina flavipes new species

Quite similar to *furva* in size and general appearance but with the following evident differences: bristles of head and thorax longer and more slender; front and mesonotum more densely overlaid with rusty brown pollinosity, with a median anterior streak quite evident; anterior, nonshiny corners of front more extensive and quite black, almost velvety in appearance; halteres paler; meso- and hypopleura much more extensively brownish pollinose; legs, except for coxae, nearly wholly pale yellow, with at most a slight discoloration on some femora, tibiae and apical tarsal segments.

Third antennal segment yellow below, darkened above, the arista very short haired above. Mesonotum essentially smooth, the scutellum roughened, the abdominal tergites densely micro-punctate with the enlarged fourth tergite distinctly shining when viewed from behind. Wing venation similar to that of *furva*, but the veins are darker and stouter than in that species. Costal index about 0.6; fourth vein index 3.0-3.1.

Holotype, Pasadena, California, April 24, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes, four as follows: 1, South Pasadena, 1, Montebello, California; 2, Mission (near Hamilton's Ranch), Lower California, Mexico (D. Lindsley, coll.).

Hyadina furva (Cresson)

Lytogaster furva Cresson, 1926. Tr. Amer. Ent. Soc. 52:257.

Cresson (1949) recorded nine specimens, from New York, New Jersey, Maryland, Georgia, Florida, Texas, Arkansas, Illinois, and Indiana. We have seen 58 specimens, from Maryland, Delaware,

Illinois, Florida, Alabama, Mississippi, Arkansas, Louisiana, Texas, and Arizona.

Hyadina gravida Loew

This is the most abundant species of the genus, though it is rather infrequent east of the Mississippi River. We are recognizing two subspecies, which are usually distinct. We have, however, seen a few intermediate specimens (from Minnesota, Arizona, and California). These we have arbitrarily placed in the subspecies that is otherwise represented in their respective regions. None of them is as extreme as the usual type of the alternative subspecies.

Hyadina gravida subsp. **gravida** Loew

Hyadina gravida Loew, 1863. Berl. ent. Zeit. 7:325.
Lytogaster willistoni Cresson, 1916. Ent. News 27:150.
Lytogaster gravida Johnson, 1925. Occas. Papers Boston Soc. Nat. Hist. 7:273.

The synonymy of *willistoni* is on the authority of Cresson (1949). Cresson recorded the species from Alaska, Canada, and 27 states—suggesting that it probably occurs also in the other 21. Since he did not distinguish the two subspecies, his data are not directly comparable with ours. We have examined 68 specimens, from Alaska, British Columbia, Oregon, California, Utah, Arizona, Colorado, Wyoming, Lower California, and Orizaba, Mexico. We have not seen the types of *gravida* or of *willistoni;* the present is identified as the typical subspecies only on geographical grounds, since the type of *gravida* came from Alaska and that of *willistoni* from California.

Hyadina gravida subsp. **excavata** new subspecies

Differs from typical *gravida* in that the frontal triangle is strongly depressed on either side, leaving the ocelli and the lateral margins distinctly elevated. In typical *gravida* the entire triangle is flat, except that there is a narrow ridge along the lateral margin on each side.

Holotype, New York, New York (Van Cortlandt Park), May 14, 1925, deposited in the Academy of Natural Sciences of Philadelphia.

Thirty-five paratypes, from New York, New Jersey, Virginia, Ohio, Illinois, Iowa, Minnesota, Pennsylvania, Alabama, and

Texas (Austin). Johnson recorded two specimens of *gravida* from Massachusetts; we have seen no New England material, and feel that such a record needs confirmation, since *abdominalis* or *neglecta* may be concerned.

Hyadina longicornis new species

Black; tarsi brownish; halteres white; third antennal segment yellow below. Face, cheeks, and lower orbits strongly cinereous, except central area of face. Front and upper occiput pruinose. Mesonotum gray pruinose, with a black central stripe and one including each dorsocentral line, all three of these broader posteriorly. Pleurae and scutellum priunose. Abdomen shining, smooth.

Antennae porrect, as long as greatest diameter of eye, first segment evident. Outer vertical long, inner very long, ocellars long. No orbitals. Clypeus visible only from below. A well-developed dorsocentral just posterior to the suture; the usual ephydrid interalar present, lateral to the dorsocentral line; two pairs of scutellars, the apical ones longer and convergent; no humerals or anterior notopleural; posterior notopleural remote from the notopleural suture. Acrostichal hairs in two irregular rows.

Wings short, broad, dark, with about 14 distinct more or less rounded white spots. Second vein straight, strongly diverging from third. Costal index about 0.7; fourth vein index about 1.5. Posterior crossvein rather more than half as long as the distance separating the crossveins.

Fourth abdominal tergite nearly as long as second and third combined; fifth longer than third, not bent under the fourth.

Length 2 mm.; wing, 1.25 mm.

Holotype, Summit County, Ohio, June 28, 1937 (L. J. Lipovsky, Univ. Kansas collection). This is the only specimen we have seen of this very distinct species.

Hyadina neglecta new species

Black; tarsi yellow; halteres white; third antennal segment mostly yellowish, dark dorsally. Face and cheeks thinly gray cinereous when viewed from certain angles, the adjacent orbits more strongly so. Front and mesonotum granulose, subshining, slightly bronzed. Pleurae thinly granular-cinerous. Scutellum rugulose. Abdominal tergites shining, heavily chitinzed, punctate.

No outer verticals or orbitals. Clypeus visible, tongue-like. Scutellum flattened, its apex blunt with a short terminal tooth-like point. Fourth abdominal segment strongly convex, as long as second and third combined; second and third evenly arched, with no differentiated dorsal area; fifth bent under fourth, slightly longer than third.

Wings clear, veins brownish. Costal index about 0.6; fourth vein index about 2.5. Second vein bent strongly to margin apically, ending at about level of posterior crossvein; third and fourth veins straight, slightly diverg-

ing in their apical sections; posterior crossvein two-thirds as long as the distance separating the crossveins. Wings rather short.

Length 2.5 mm.; wing, 2 mm.

Holotype, Van Cortlandt Park, New York, New York, May 14, 1925, deposited in the Academy of Natural Sciences of Philadelphia.

One paratype, Charlestown, Rhode Island, July 29, 1924.

Hyadina pruinosa (Cresson)

Hydrina pruinosa Cresson, 1926. Tr. Amer. Ent. Soc. 52:256.
Hyadina pruinosa Cresson, 1949. Tr. Amer. Ent. Soc. 74:254.

Cresson (1949) recorded 19 specimens, from Alberta, South Dakota, Utah, Idaho, Washington, Oregon, and California. We have seen 44 specimens, from Washington, Oregon, California (south to Los Angeles County), Arizona, Colorado, and Utah.

Hyadina subnitida new species

Black; third antennal segment yellowish below; legs yellowish, femora, tibiae, and terminal tarsal segments strongly brownish. Face thinly whitish cinereous; pleurae strongly gray pollinose; mesonotum and median area of scutellum granulose, subshining; strong lateral velvety black areas on scutellum. Abdomen mostly shining black; no markedly long or heavily chitinized abdominal tergites.

Inner verticals and ocellars well-developed; no other bristles on frontal area. Facials thin and short. Clypeus not visible. One notopleural (the posterior), one postalar, one interalar; no other bristles on mesonotum. A single median row of weak acrostichal hairs. Scutellum with a moderate pair of apical bristles; lateral pair very small.

Wings hyaline, both crossveins with dark clouds. Veins dark. Costal index about 0.9; fourth vein index about 2.6.

Length about 1.9 mm.; wing, about 1.8 mm.

Holotype, male, Cass County, Minnesota, May 21, 1939 (H. E. Milliron; University of Minnesota collection).

Three paratypes, all in the University of Minnesota collection: Houston County, Minnesota (May 26, 1940; A. C. Peterson); Little Canada, Minnesota (July 15, 1941; H. E. Milliron); Emmett, Idaho (April 15, 1938; H. S. Telford).

LIPOCHAETA

Lipochaeta Coquillett, 1896. Ent. News 7:220.

The only known species of this peculiar genus is the following.

Lipochaeta slossonae Coquillett

Lipochaeta slossonae Coquillett, 1896. Ent. News 7:220.
Lipochaeta texensis Townsend, 1898. Ent. News 9:168.

We have seen 103 preserved specimens, from New Jersey, Maryland, Florida, Texas (south to Brownsville; *texensis* was described from Padre Island), California (north to San Mateo County), and Lower California. The species occurs on rather smooth sandy sea beaches and appears never to have been taken about inland saline areas. It is not a strong flier, and usually remains on the moist sand, even when disturbed.

NAPAEA

Napaea Desvoidy, 1830. Essai Myod., p. 799.
Parydra Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad., 1843:144.
Chaetoapnaea Hendel, 1930. Konowia 9:150.

The nomenclature here is involved. The name *Napaea* has been considered to be preoccupied by *Napaea* Hübner; *Parydra* has been emended to *Parhydra*. Full discussions of these questions have been presented by Cresson (1934, Tr. Amer. Ent. Soc. 50:211; *ibid.*, 1949, 74:226, 238). We have followed him in considering *Napaea* and *Parydra* valid as published, with the genotypes *Ephydra coarctata* Fallén (*Napaea*) and *Ephydra aquila* Fallén (*Parydra*). However, Cresson felt that both genera were valid, whereas we are considering them only as subgenera. The genotypes are both European; we have seen both of them.

Cresson (1949) recognized *Chaetoapnaea* Hendel (type, *Ephydra pusilla* Meigen) as a subgenus, including in it the Nearctic species *abbreviata, borealis,* and *paullula.* The characters mentioned for it—two equally strong facial bristles, oblique face, tuberculate scutellum, and appendiculate second vein—are not correlated with each other, and, taken singly or in combination, they do not lead to a disposition of species that seems natural. We have therefore not recognized *Chaetoapnaea.*

Further difficulties arise from the fact that we have made the separation between *Napaea* and *Parydra* in a different place from that used by Cresson, for we have been unable to draw up a satisfactory definition of the differences as he arranged the species. In the case of *alpina,* which he puts very close to the forms we have

placed in *Parydra,* we are convinced that it is a true *Napaea.* With this exception we have restricted the subgenus *Parydra* to what Cresson called the "*bituberculata* group."

Our third subgenus, *Callinapaea,* here proposed as a new subgenus, is based on a single species, *aldrichi,* new species. We have seen a specimen of this labelled by Cresson as "*Paranapaea aldrichi.*" In order to avoid possible confusion we have retained this manuscript specific name, but the species has little resemblance to the European *Paranapaea* Hendel (type, *Parydra pubera* Loew). We have been tempted to consider *Callinapaea* a full genus, but the one really clear difference from *Napaea* is the hidden clypeus, and in *Hyadina,* at least, this is only a specific character. Further, it has been our policy to keep generic names at a minimum, in the belief that this is by far the most convenient system for the non-specialist, while the recognition of subgenera should satisfy the specialist.

The species of *Napaea* are to be found along the margins of streams, pools, and lakes, most often where there is some exposed soil not covered with vegetation. We have found only *N. imitans* with certainty in saline areas, although the localities suggest that the related *N. trituberculata* may have a similar preference.

Napaea: *Key to the Nearctic Species*

1. Clypeus not visible in profile view; wings hyaline, with numerous definite brown spots ..... subg. **Callinapaea** 3
   Clypeus visible in profile, gradually tapering in width, narrowing posteriorly; wings hyaline, sometimes with dark spots at apices of veins or on crossveins, or dark with pale spots 2
2. Head bristles small and thin, ocellars less than half as long as the distance from their bases to anterior margin of front; costal index over 2.0 ..... subg. **Parydra** 4
   Head bristles larger, ocellars more than half as long as distance from their bases to anterior margin of front; costal index 2.0 or less. subg. **Napaea** 9

Subgenus **Callinapaea.**

3. Only Nearctic species ..... **aldrichi,** n. sp.

Subgenus **Parydra.**

4. Apical scutellar tubercles much farther apart than their length 5
   Apical scutellar tubercles scarcely farther apart than their length; lateral tubercles well developed ..... **quadrituberculata** (Loew)

5. Fore coxae and all femora with numerous pale hairs, those of flexor surface of fore femora at least half as long as femoral diameter; no dark hairs on apical extensor portion of second femora; tibiae at least in part yellow; metanotum wholly opaque .....**tibialis** (Cresson)
   Pale hairs of coxae and femora fewer and shorter; dark hairs present on apical extensor area of second femora; tibiae usually entirely brown to black 6
6. Lateral scutellar tubercles evident; males with a postero-flexor row of dense, short, black hairs on second femora; apical scutellar tubercles about ⅓ length their bristles, the latter often parallel to each other; posterior crossvein usually with a distinct dark cloud; face ochraceous to brownish with faint dull bluish undercolor above
   incommoda (Cresson)
   Lateral scutellar tubercles frequently not or only scarcely evident; no flexor row of dark hairs on male second femora; other characters not entirely as above .....**bituberculata** (Loew).....7
7. Metanotum wholly opaque, rarely with a small amount of shininess; mesonotal pollinosity complete, the acrostichal rows not denuded of pollen though sometimes shining 8
   Metanotum at least in part polished medianly; acrostichal lines clearly denuded of pollen; apical tubercles often small, their bristles short, stout, turned upward and inward; face whitish to pale ochraceous, the upper median area with dull greenish to brownish green undercolor
   subsp. **nitida** (Cresson)
8. Face medianly shining metallic blue, otherwise whitish to cinereous; apical tubercles short, their bristles 6 to 8 times as long; posterior crossveins only faintly clouded .....subsp. **papulata** (Cresson)
   Face dull or only slightly shining medianly; apical tubercles strong, prominent, about ¼ length of their bristles; cloud on posterior crossvein easily evident .....subsp. **bituberculata** (Loew)

Subgenus **Napaea.**

9. Face shorter, concave or slightly convex in profile; epistomal margin usually sloping upward anteriorly; facial bristle extending below epistomal margin 10
   Face longer, definitely convex in profile; epistomal margin horizontal, not sloping upward anteriorly; facial bristle not usually extending as low as epistomal margin 17
10. Second vein usually with an apical branch, bent rather sharply to costa at apex, making almost a right angle with it, this area usually with a brown cloud 11
    Second vein rarely with an apical branch, curving gently to costa and making a strongly acute angle with it, rarely clouded 14
11. Third and fourth veins undulated, strongly bowed in each section, the last section of third and penultimate of fourth sinuate ..**parva** (Cresson)
    Third and fourth veins only gently curved 12

12. Mesonotum brownish with indistinct markings; the whitish spots at sides of posterior crossvein not distinct or sharply defined 13
Mesonotum black with distinct white markings; white spots at sides of posterior crossvein sharply defined, conspicuous .....**varia** (Loew)
13. Face and mesonotum densely brownish; face densely cinereous with little or no ground color visible .....**appendiculata** (Loew)
Face and mesonotum blacker, scarcely brownish; face sparsely cinereous, the ground color everywhere visible with only a few well-separated cinereous spots .....**socia** Cresson
14. Wings short, posterior margin strongly convex; posterior crossvein well beyond tip of second vein; costal index close to 1.0
abbreviata (Loew)
Wings of usual length, posterior margin only moderately convex; posterior crossvein basal to tip of second vein; costal index over 1.0 ...15
15. Mesonotum blackish, rather shining, with grayish stripes and dots, especially striking being a lateral whitish spot in the suture on each side; white spots on either side of posterior crossvein conspicuous
borealis Cresson
Mesonotum without conspicuous whitish spots in the suture; pale spots on either side of posterior crossvein weak or absent 16
16. Face whitish when viewed from above; front and mesonotum shining, black to bronzed, without brownish pollinosity, the mesonotum somewhat sculptured dorsally .....**alpina** Cresson
Face thinly brownish pollinose when viewed from above; front and mesonotum not sculptured, more or less brownish opaque pollinose
paullula (Loew)
17. Apex of scutellum drawn out into a definite papilla that is at least as long as wide 18
Apex of scutellum blunt or acute; if an apical papilla is somewhat developed, it is not as long as broad 21
18. Brownish species; lateral scutellar tubercles distinctly smaller than apical papilla, pointing posteriorly 19
Blackish species; lateral scutellar tubercles nearly as large as apical papilla, flaring .....**trituberculata,** n. sp.
19. Scutellum convex, the apical papilla arising well below its dorsal surface; tibiae dark brown; fourth vein index about 1.0; with white areas around the dark clouds over crossveins 20
Scutellum rather flat, the apical papilla arising scarcely below its dorsal surface; tibiae often partly pale; fourth vein index 1.3 or more; without whitish areas around clouds of crossveins ...**imitans** (Loew)
20. Apical scutellar papilla large, nodular, larger near tip than at base; face densely brown .....**unituberculata** (Loew)
Apical papilla smaller, decreasing in width toward apex; face yellowish white .....**vanduzeei** Cresson
21. Costal index over 1.5; wings dark with extensive clouds over crossveins 22

Costal index little more than 1.0; wings clear with light clouds over crossveins 23

22. Apex of scutellum blunt; fourth vein index about 1.6; face white **alpina** Cresson

Apex of scutellum pointed, sometimes bearing a small apical papilla; fourth vein index about 1.1; face brown .....**aurata** Jones

23. Face densely white pruinose .....**pinguis** (Walker)

Face usually thinly brownish pruinose, occasionally rather dense but then yellowish, or grayish but then with much of the ground color showing .....**breviceps** (Loew).....24

24. Gray pollinose fasciae of abdominal tergites distinct; found in Arizona and eastward .....subsp. **breviceps** (Loew)

Gray abdominal fasciae scarcely discernible; in Arizona and westward subsp. **vicina** (Cresson)

The following species, which we have not seen, are not included in the above key.

Napaea halteralis Cresson, 1930. Ent. News 41:8. (Washington, Idaho, California). This is close to *appendiculata* and *socia;* we are not convinced that it is a valid species.

Napaea metallica (Cole). (*Parydra metallica* Cole, 1921. Proc. Calif. Acad. Sci. 11:176: *Napaea metallica* Cresson, 1949. Trans. Amer. Ent. Soc. 74:234), (Pribilof Islands, Alaska). This is near *yukonensis* (see below). Cresson puts them in his subgenus *Napaea,* but on our separation the venation agrees better with the subgenus *Parydra.* The character of the head bristles, which would help to settle the question, is not clear.

Napaea transversa (Cresson). (*Parydra transversa* Cresson, 1940. Notul. Natur. 38:10). (Florida.) Cresson (1949) compares this to *imitans,* and places it near *breviceps.*

Napaea yukonensis Cresson, 1949. Trans. Amer. Ent. Soc. 74:234. (Yukon, Alaska.) See notes under *metallica,* above.

Subgenus **Callinapaea**, new subg.

In this subgenus the clypeus is completely retracted into the oral cavity and is not evident externally, and the wings are strikingly maculate, with numerous definite brown spots in the cells. The type is the following new species.

Napaea (Callinapaea) aldrichi new species

♂, ♀. Front heavily pollinose, pale tan, lighter along orbits and with brown spots around bases of vertical bristles and over ocellar mound.

Antenna and arista brown. Face rather flat, straight in profile, the antennal foveae very weak, densely yellowish to pale brownish throughout, as are the cheeks. Cheek width about ¼ greatest diameter of eye. Palpi tannish yellow; one weak pair of diverging posterior orbitals with a row of tiny hairs anterior to them; ocellars, inner and outer verticals strong; postocellars present as minute hairs, but without true postverticals. Arista short pubescent. One pair of stout facial bristles and on each side 3 or 4 shorter hairs along the curving parafacial groove. One pair of strong interalars; acrostichal hairs in two definite rows between the interalars. Basal scutellars short, scarcely ⅓ length apical pair. No humerals, anterior notopleural weak, posterior one stronger; presutural weak; one mesopleural, one sternopleural, only a little stronger than the anterior notopleural.

Mesonotum densely grayish pollinose (usually with a faint greenish tinge) with poorly defined brown, sometimes more shining, areas along the bristle rows, above humeri, and over all but the central part of scutellar disc; brown areas in acrostichal region often tend to fuse somewhat. Pleurae gray pollinose, slightly browned along lower edge of mesopleura and adjacent part of pteropleura. Halteres pale.

Legs mostly brownish with yellowish areas, palest basally and apically on tibiae and on basal tarsal segments. Legs without strong bristles. Abdomen entirely black, thinly gray pollinose, shining when viewed from some angles.

Wings hyaline with a conspicuous pattern of brown spots; spots of marginal and submarginal cells quite distinct, those of other cells more diffuse. The typical pattern is as follows: marginal cell, 5-6 spots; submarginal, 3 somewhat elongate spots; 1st posterior, 3-4 spots; anterior crossvein dark; 2nd posterior cell, about 2 diffuse areas; 3rd posterior cell, about 2 still less distinct dark areas. Wing base, basal to humeral break, pale yellow; second vein somewhat undulating; costa reaching fourth vein. Costal index 5.0 or more; fourth vein index about 1.3.

Body length, 2.5 mm.; wings, 2.7 mm.

Holotype, Arcadia, Los Angeles County, California, April, 1950, deposited in the Academy of Natural Sciences of Philadelphia.

Six paratypes: Arcadia, Los Angeles, Berkeley, California; Sequim, Washington; Ledges State Park, Boone County, Iowa (J. L. Laffoon collection). The Berkeley specimen is in the collection of the California Academy of Sciences.

Subgenus **Napaea** Desvoidy

Napaea (Napaea) abbreviata (Loew)

Parydra abbreviata Loew, 1861. Berl. ent. Zeit. 5:357.
Napaea abbreviata, Johnson, 1925. Occas. Pap. Bost. Soc. Nat. 7:274.
Napaea hulli Cresson, 1934. Trans. Amer. Ent. Soc. 60:212.

Cresson (1949) recorded *abbreviata* from five specimens from Massachusetts, Pennsylvania, and Virginia, and *hulli* from one specimen from Mississippi. He suggested that *hulli* is perhaps only a pale form of *abbreviata.* We have a single specimen, from Kushla (Mobile County), Alabama; this has the pale legs of *hulli* and the costal index of *abbreviata.* We have, therefore, treated *hulli* as a synonym, though more material may justify its retention as a southern subspecies.

Napaea (Napaea) alpina Cresson

Napaea alpina Cresson, 1924. Ent. News 35:163.
Parydra alpina Johnson, 1938. Biol. Surv. Mt. Des. Reg. 6:352.

Cresson (1949) treated this as being near *bituberculata,* i.e., in what we have considered the subgenus *Parydra;* we cannot agree that it is close to this group. He recorded 35 specimens, from Ontario, British Columbia, Maine, Wyoming, Washington, and Oregon. We have examined 10 specimens, from Quebec, Massachusetts (Woods Hole), Minnesota, North Dakota, Nebraska, and Washington. The species is evidently not "boreal", as Cresson has it.

Napaea (Napaea) appendiculata (Loew)

Parydra appendiculata Loew, 1878. Zeit. ges. Naturw. 51:202.
Napaea appendiculata Cresson, 1949. Tr. Amer. Ent. Soc. 74:230.

Cresson (1949) recorded 240 specimens, from Washington, Oregon, California, Idaho, Utah, Arizona, Wyoming, Colorado, New Mexico, South Dakota, Kansas, Texas, Michigan, Illinois, and Quebec. We have examined 302 specimens, from Saskatchewan, Manitoba, Washington, Oregon, California, Arizona, Idaho, Nevada, Utah, Wyoming, Colorado, New Mexico, South Dakota, Minnesota, Nebraska, Kansas, Oklahoma, Texas (Austin), Iowa, and Lower California. In the western states this is the most abundant species of the genus.

Napaea (Napaea) aurata (Jones)

Parydra aurata Jones, 1906. Univ. Calif. Publ. Ent. 1:154.

Cresson (1949) recorded "about 300 specimens from Utah, Idaho, Washington, Oregon, California, and New Mexico." We have examined 88 specimens, from all the above states and from Lower California.

Napaea (Napaea) borealis Cresson

Napaea borealis Cresson, 1949. Tr. Amer. Ent. Soc. 74:245.

Cresson recorded eight specimens, from Washington and Idaho. We have examined 21 specimens, from Alaska, Washington, Oregon, and California (Humboldt County).

Napaea (Napaea) breviceps (Loew)

This species occurs in an eastern and a western form, usually considered separate species. Cresson (1949) suggested that they were perhaps subspecies, but did not so list them. Our observations confirm his suggestion.

Napaea (Napaea) breviceps subsp. **breviceps** (Loew)

Parydra breviceps Loew, 1862. Mon. Dipt. N. Amer. 1:167.
Parydra limpidipennis Loew, 1878. Zeit. ges. Naturw. 51:201.

The synonymy of *limpidipennis* is on the authority of Cresson (1949), who recorded " 390 specimens, from all states east of 104 degrees West longitude except Maine, Vermont, Rhode Island, Minnesota, North Dakota, Kentucky, Nebraska, Tennessee, North and South Carolina, Alabama, Louisiana, and Arkansas; nor have I seen it from Canada." We have examined 249 specimens, from Massachusetts, New York, New Jersey, Pennsylvania, District of Columbia, West Virginia, Virginia, Ohio, Michigan, Indiana, Illinois, Kentucky, Tennessee, Alabama, Minnesota, Iowa, Missouri, Louisiana, Kansas, Oklahoma, Arkansas, Texas, Colorado, New Mexico, and Arizona (Jacob's Lake). This is the most abundant member of the subgenus in the eastern states.

Napaea (Napaea) breviceps subsp. **vicina** (Cresson)

Parydra vicina Cresson, 1940. Notul. Natur. 38:9.

Cresson (1949) recorded 18 specimens, from California and Oregon. We have examined 22 specimens, from California (Tulare and Contra Costa counties to San Diego County) and Arizona (Oak Creek Canyon).

Napaea (Napaea) imitans (Loew)

Parydra imitans Loew, 1878. Zeit. ges. Naturw. 51:201.
Napaea imitans Johnson, 1925. Occas. Pap. Bost. Soc. Nat. Hist. 7:214.

Cresson (1949) recorded 40 specimens, from Maine, Massachusetts, Connecticut, New York, New Jersey, and Georgia. We

have examined 12 specimens, from Maine, Massachusetts, Connecticut, and New York. All our localities are coastal, and at least the four specimens from Branford, Connecticut, were taken between tide levels. This, and perhaps the related *N. trituberculata,* appear to be the only Nearctic members of the genus associated with saline environments.

Napaea (Napaea) parva (Cresson)

Napaea undulata Cresson, 1934. Tr. Amer. Ent. Soc. 60:212.
(Not *Parydra undulata* Becker, 1926.)
Parydra parva Cresson, 1949. Tr. Amer. Ent. Soc. 74:241.

Cresson (1949) recorded a single specimen, the type, from the District of Columbia. We have a single specimen, taken at Woods Hole, Massachusetts (September 5, 1922).

Napaea (Napaea) paullula (Loew)

Parydra paullula Loew, 1862. Mon. Dipt. N. Amer. 1:167.
Napaea paullula Cresson, 1949. Tr. Amer. Ent. Soc. 74:232.
Napaea vulgaris Cresson, 1949. Tr. Amer. Ent. Soc. 74:233.

We are unable to distinguish the two species recognized by Cresson in this difficult and variable group. He recognized as *paullula* nine specimens, from eastern and western Canada, New Hampshire, New York, Pennsylvania, and Illinois; as *vulgaris,* 113 specimens, from Quebec to Alaska, south to Pennsylvania, Kansas, and Nevada. We have seen the type of *paullula* and material so determined by Cresson. Our list includes 83 specimens, from Alaska, British Columbia, Quebec, Massachusetts, New York, New Jersey, Pennsylvania, Michigan, Indiana, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Wyoming, New Mexico, Idaho, Utah, Arizona, Nevada, Washington, Oregon, and California (Humboldt and Mono counties). In addition, four specimens from Xico and one from Atoyac, state of Vera Cruz, Mexico, are doubtfully to be referred here.

Napaea (Napaea) pinguis (Walker)

Ephydra pinguis Walker, 1856. Ins. Saund. 4:409.
Parydra pinguis Loew, 1878. Zeit. ges. Naturw. 51:199.

Cresson (1949) recorded nine specimens, from Pennsylvania, Ohio, Maryland, West Virginia, Kansas, and Mississippi. We

have examined 22 specimens, from Massachusetts, New Jersey, Maryland, Delaware, Virginia, South Carolina, Iowa, Kansas, and Texas (west to Bastrop).

Napaea (Napaea) socia Cresson

Napaea socia Cresson, 1934. Tr. Amer. Ent. Soc. 60:213.

Cresson (1949) recorded 44 specimens from California and " 19 + " from Washington and Oregon. We have seen ten specimens, from Washington and California (south to Los Angeles County).

Napaea (Napaea) trituberculata new species

Dark blackish brown; tibiae, tarsi, and apices of femora yellowish, third tibiae brown in middle. Face moderately whitish pruinose, shining ground visible, especially above. No polished areas on thorax. Second, third, and fourth abdominal tergites with indistinct relatively less pruinose fasciae.

Face long, strongly convex in profile. Second facial two-thirds length of upper one. Cheek, below lowest point of eye, nearly half as wide as height of eye. Front broad, its bristles large, the ocellars as long as the distance from their bases to level of the antennae.

Scutellum convex above, nearly half as long as mesonotum; its apex drawn out into a tubercle that is longer than wide. Apical scutellar bristles minute, arising from tubercles that are nearly as large as the terminal tubercle, and are separated from it by a distance approximately twice their own length, and are flaring—their axes making an angle of about 45° with the median axis of the body. Basal pair of scutellars minute, arising from very small but distinct papillae.

Wings dusky, crossveins with darker clouds and a relatively paler spot on each side of each of these clouds. Costal index about 1.2; fourth vein index about 1.1. Second vein unbranched, making an acute angle with the costa.

Length, 3.5 mm., wing, 3.3 mm.

Holotype, Coden, Alabama, October 15, 1924. Deposited in the Academy of Natural Sciences of Philadelphia.

Paratype, Gulfport, Mississippi (Cornell University collection).

Since these are both coastal localities, it may be surmised that this, like the related *N. imitans,* is a salt-living form. The geographical data and the resemblance to *imitans* would suggest that it might be *N. transversa* Cresson, but that species is stated to have no suggestion of a terminal tubercle on the scutellum.

Napaea (Napaea) unituberculata (Loew)

Parydra unituberculata Loew, 1878. Zeits. ges. Naturw. 51:200.

Cresson (1949) recorded 45 specimens, from Connecticut, New York, New Jersey, Pennsylvania, Delaware, District of Columbia, Virginia, and West Virginia. We have examined 34 specimens, from New Jersey, Maryland, Virginia, West Virginia, Illinois, Missouri, and Texas (Paris).

Napaea (Napaea) vanduzeei Cresson

Napaea vanduzeei Cresson, 1933. Ent. News 44:68.

The species is recorded only from the three types from New York (Niagara Falls and East Aurora). We have examined one paratype male (California Academy of Sciences collection), and the species has been placed in the key on the basis of this specimen.

Napaea (Napaea) varia (Loew)

Parydra varia Loew, 1863. Berl. ent. Zeits. 7:326.
Napaea varia, Johnson, 1925. Occas. Pap. Bost. Soc. Nat. Hist. 7:274.

Cresson (1949) recorded 94 specimens, from Washington, Oregon, Idaho, California, Montana, Michigan, Vermont, New Hampshire, and Maine. We have examined 47 specimens, from Alaska, Washington, Oregon, California (Humboldt County), Arizona, New Hampshire, and Connecticut.

Subgenus **Parydra** Stenhammar

Napaea (Parydra) bituberculata (Loew)

This species occurs in three geographical forms, described as species, that appear to us best considered as subspecies. Cresson (1949, p. 246) suggested that the difficulty of separating *nitida* and *bituberculata* "gives rise to the improbability that the present [*nitida*] is a distinct species." His data and ours agree in showing a geographical distinction for the three forms: *bituberculata* east of approximately the 100th meridian, *nitida* west of this line except in the neighborhood of Puget Sound and the lower Columbia River, where it is replaced by *papulata*. It may well be that further study will show that the European *N. aquila* Fallén belongs to the same aggregate species—material that we have seen from Holland, Germany, Austria, and Hungary (six specimens,

two of them determined by Kertesz) suggests that this is the case. However, we are not yet prepared to substitute this older name for the group.

Napaea incommoda and *N. tibialis* are also very similar to this species, but both occur with the subspecies *nitida* throughout much of its range.

Napaea (Parydra) bituberculata subsp. **bituberculata** (Loew)

Parydra bituberculata Loew, 1862. Mon. Dipt. N. Amer. 1:165.

Cresson (1949) recorded "over 500 specimens from all states east of the Montana-New Mexico line except Rhode Island, North Dakota, Delaware, Kentucky, Nebraska, Tennessee, North and South Carolina, and the Gulf states (except Florida), Arkansas, and Oklahoma."

We have examined 331 specimens, from Quebec, Ontario, Maine, Massachusetts, New York, New Jersey, Maryland, Virginia, West Virginia, Pennsylvania, Ohio, Indiana, Illinois, Missouri, Tennessee, Michigan, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, and Kansas. Johnson has recorded it from Connecticut and Rhode Island.

The following records give the western boundary of the known distribution: Minnesota: Lake County in the northeast, Faribault County in the south; North Dakota: Dawson, central region; South Dakota: Sioux Falls, eastern edge; Kansas: Douglas County, northeastern region; Iowa: 96 specimens from Boone County, near the center of the state, all belonging to this subspecies. The southern boundary runs approximately from Kansas to Tennessee and Virginia.

Napaea (Parydra) bituberculata subsp. **nitida** (Cresson)

Parydra nitida Cresson, 1915. Ent. News 26:70.

Cresson (1949) recorded "over 525 specimens from the Pacific and Rocky Mountain states west of the North Dakota-Texas line excluding New Mexico, Arizona, and southern California, but including Alaska, western Canada and Michigan." We have seen 138 specimens, from Alaska, Alberta, Saskatchewan, Manitoba, Washington, Oregon, California (Inyo and Mono counties), Idaho, Nevada, Montana, Wyoming, Utah, Colorado, Arizona,

New Mexico, South Dakota, and Minnesota. In the far northwest, because of the relation to *papulata,* the more detailed records are presented, as follows: Anchorage, Alaska; Medicine Hat, Alberta; Colokum Pass, Spokane, Washington; Mount Hood, North Powder, Oregon; Fish Haven, Burley, Idaho; Drummond, Whitehall, Montana. Eastward the limiting records, where *nitida* approaches the range of subspecies *bituberculata,* are: 12 miles south of Churchill, Manitoba; Lancaster, near the northwestern corner of Minnesota; Pactola, in the Black Hills of western South Dakota; 12 miles northwest of Lusk, in eastern Wyoming; Cloudcroft, New Mexico. We have seen a specimen from Lapeer County, Michigan, that was determined as *nitida,* and is perhaps the basis of Cresson's record from that state. It seems to us best considered *bituberculata,* though it is not quite typical of either form.

Napaea (Parydra) bituberculata subsp. **papulata** (Cresson)

Parydra papulata Cresson, 1949. Tr. Amer. Ent. Soc. 74:247.

Cresson recorded 38 specimens, from Vancouver Island, British Columbia, Washington (types from Friday Harbor), Oregon, and Idaho. We have examined 32 specimens, from Langley Prairie, British Columbia; Sequim, Humptulips, Friday Harbor (paratype, U. S. National Museum collection), Washington; Troutdale, Moro, Oregon.

Napaea (Parydra) incommoda (Cresson)

Parydra incommoda Cresson, 1930. Ent. News 41:81.

Cresson (1949) recorded " over 125 specimens ", from western Canada, Montana, Wyoming, Colorado, Utah, Nevada, Idaho, Washington, and California. We have examined 61 specimens, from Oregon, California (Shasta and Tulare counties), Arizona (south to the Chiricahua Mountains), Utah, Colorado, and Wyoming.

Napaea (Parydra) quadrituberculata (Loew)

Parydra quadrituberculata Loew, 1862. Mon. Dipt. N. Amer. 1:165.

Cresson (1949) recorded this species from " east of the Montana-New Mexico line from the states on the Gulf of Mexico north to southern Canada ", but expressed doubts as to its occurrence in

the South Atlantic states. We have examined 345 specimens, from Manitoba, Quebec, Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Florida, Michigan, Ohio, Indiana, Illinois, Tennessee, Alabama, Minnesota, Iowa, Missouri, Oklahoma, Arkansas, Louisiana, North Dakota, South Dakota, Nebraska, Kansas, Wyoming, and Texas (West to Austin). Johnson has recorded it from Rhode Island.

Napaea (Parydra) tibialis (Cresson)

Parydra tibialis Cresson, 1916. Ent. News 27:150.

Cresson (1949) recorded "over 100 individuals from Arizona, Colorado, New Mexico, Utah, Idaho, Washington, Oregon, California, Nebraska, and South Dakota; also a specimen from Pennsylvania." We have examined 108 specimens, from Oregon, California (south to San Diego County), Idaho, Utah, Arizona, Wyoming, Colorado, New Mexico, Nebraska, Kansas, Minnesota, Oklahoma, and Texas (Austin).

OCHTHERA

Ochthera Latreille, 1802. Hist. Nat. Crust. Ins. 3:462.

This is perhaps the most distinct genus in the Ephydridae. The greatly enlarged fore femora are only faintly suggested in *Athyroglossa,* and the spurred fore tibiae are nowhere else present. These Mantis-like front legs are used, as in many other Arthropoda, for the capture of prey. There are few references to this habit in *Ochthera;* we have seen the bare statement (1931, Proc. Ent. Soc. London 6:16) that B. M. Hobby "demonstrated *Ochthera mantis,* with its prey *Oscinis*", and Bohart and Gressitt (1951, Bull. B. P. Bishop Mus. 204:87) state that the adults of *Ochthera canescens* Cresson, from Guam, ". . . fly close to the water surface and skate upon it for short intervals in order to grasp their prey with their raptorial fore legs . . . Their prey consisted mainly of *Culex* mosquito larvae." One of us (A. H. S.) has found that *O. mantis* subsp. *tuberculata,* when kept in the laboratory in glass vials, will grasp small flies in its front legs, pierce them with its heavy proboscis, and suck their juices. The

following were successfully captured and eaten by a single specimen of *O. m. tuberculata* in a period of five days: 1 small Dolichopodid, 1 *Drosophila athabasca* Sturtevant and Dobzhansky, 1 *D. transversa* Fallén, 2 *D. putrida* Sturtevant, 1 *Scaptomyza graminum* (Fallén), 2 *Leptocera* sp., 2 *Discocerina exigua* (Cresson), 1 *Scatella stagnalis* (Fallén). The *Ochthera* did not lie motionless in wait for the prey, but continued slowly moving about, until apparently by accident the prey was near its head end; then it would jump, usually from less than a centimeter away, pounce on the prey, hold it with both front legs, and suck its juices. Since these observations were made, freshly caught specimens of *O. m. mantis* have been seen eating a Chironomid and a small Cicadellid.

The species of *Ochthera,* like most other Ephydridae, are to be found in moist places. They seem to be especially frequent where there is some exposed mud and some shade; we have not found them in saline and only occasionally in alkaline locations.

The genus is world-wide in distribution. The genotype is *Musca mantis* DeGeer.

Ochthera: *Key to the Nearctic Species*

1. Parafacial[5] (hairy) area broader, just below tubercle, than face (bare area) at the same level, its hairs rather numerous and not in regular rows 2
   Parafacial area nowhere broader than face at tubercle, its hairs few, usually in one or two definite rows 5
2. Face with a distinct median black polished area; parafacial hairs arising from polished black lines ..... **lauta** Wheeler
   Face without a median black polished area 3
3. Parafacial hairs arising from small black dots; tibial spur of first leg not over half the length of the basal tarsal segment ..... **pilosa** Cresson
   Parafacials not arising from black dots; tibial spur of first leg nearly as long as basal tarsal segment ..... **mantis** (DeGeer) 4
4. Tarsi of first leg black (with reddish hairs below); usually larger than the following ..... subsp. **mantis** (DeGeer)

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[5] If the face is viewed from directly in front of the animal, there will be seen a pair of grooves diverging ventrally from the tubercle. The width of the face, here referred to, is the distance between these grooves immediately below the tubercle; the width of the parafacial area is the distance (perpendicular to the eye margin, when viewed from this same angle), at this same level, between this groove and the eye.

Tarsi of first leg yellowish or reddish; seldom as large as most specimens of the preceding .....subsp. **tuberculata** Loew
5. Face with a distinct median black area 6
Face without distinct median black area .....**baia** Cresson
6. Black area present only above median tubercle ...**cuprilineata** Wheeler
Black area extending well below median tubercle .....**exsculpta** Loew
Not included: .....**melanderi** Cresson

Ochthera baia Cresson

Ochthera baia Cresson, 1931. Ent. News 42:169.

The description was based on four specimens from Mulege, Lower California, and the species seems not to have been recorded otherwise. We have examined the type and allotype (California Academy of Science collection) and a specimen from Sunnyside Canyon, Huachuca Mountains, Arizona (Kansas University collection).

Ochthera cuprilineata W. M. Wheeler

Ochthera cuprilineata Wheeler, 1896 (April). Ent. News 7:123.
Ochthera cuprilineata Williston, 1896 (Sept.). Trans. Ent. Soc. London, p. 402.

This species was ascribed to Williston by Wheeler, who had Williston's type specimens. However, since Wheeler did give a description, and since his paper appeared before Williston's, the species must be credited to him, as indicated on specimens labelled by Cresson.

The type locality is St. Vincent, West Indies. We have examined the type and have seen 107 other specimens, many of them determined by Cresson, from California (San Bernardino to San Diego counties), Arizona, New Mexico, Texas (Austin, and Starr County), and Oklahoma. The species is similar to *O. humilis* Williston (1897, Kans. Univ. Quart. 6:6) which was described from Brazil and recorded from Costa Rica by Cresson (1918, Tr. Amer. Ent. Soc. 44:65). We have seen specimens from Arizona that were determined by Cresson (in 1915) as *humilis;* they agree with the type of *cuprilineata* and not with that of *humilis* (both of which we have seen, in the American Museum of Natural History)—a conclusion which Cresson seems also to have adopted later.

Ochthera exsculpta Loew

Ochthera exsculpta Loew, 1862. Mon. Dipt. N. Amer. 1:160.

This species was described from Cuba and has been recorded from Florida by Johnson (1913, Bull. Amer. Mus. Nat. Hist. 32:86). We have seen one specimen from Cuba, one from Jamaica, and 29 from Florida (St. Augustine and more southern localities). The size of the polished black setigerous areas of the face is variable; when we had seen only a few specimens we supposed two species were present, but in the series as a whole there is no place to draw a line separating the extremes.

Ochthera lauta W. M. Wheeler

Ochthera lauta Wheeler, 1896. Ent. News 7:121.

This species appears not to have been recorded since the original description, which was based on a specimen from Milwaukee, Wisconsin. We have examined the type, in the American Museum of Natural History, and 43 additional specimens, from Iowa, Missouri, Oklahoma, and Texas (Austin vicinity). The facial markings here seem quite constant, unlike those of *exsculpta*.

Ochthera mantis (De Geer)

This European species is the genotype. It has been recognized as occurring in the Nearctic since the time of Loew. We are considering the southeastern *O. tuberculata* as a subspecies, since the two forms differ only in tarsal color and in an average size difference, and since they show the typical geographical relations of subspecies.

Ochthera mantis subsp. **mantis** (DeGeer)

Musca mantis DeGeer, 1782. Mem. Serv. Hist. Ins. 6:61.
Ochthera mantis Latreille, 1802. Hist. Nat. Crust. Ins. 3:462.
Ochthera rapax Loew, 1862. Mon. N. Amer. Dipt. 1:162.

We have examined 486 specimens, from Austria, Alaska, British Columbia, Saskatchewan, Manitoba, Ontario, Quebec, Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Delaware, Pennsylvania, Ohio, West Virginia, Tennessee, "Carolina" (type of *O. rapax*), Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, Nebraska, Kansas, Texas, Wyoming, Colorado, New Mexico, Utah, Arizona,

Nevada, Washington, Oregon, and California (south to San Diego County). Wheeler (1896) adds Illinois to this list. This subspecies seems to be absent in the Atlantic and Gulf coastal plain (except occasionally near its inner edge), where it is replaced by the closely similar *tuberculata.* Western specimens average a little larger than eastern ones, but we have been unable to discover any other characters on which to base even a subspecies.

Ochthera mantis subsp. **tuberculata** Loew

Ochthera tuberculata Loew, 1862. Mon. N. Amer. Dipt. 1:162.

We have examined the type, in the Museum of Comparative Zoology, Harvard University, and a series of 77 other specimens, from Massachusetts, New York, New Jersey, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Pennsylvania, Tennessee, Georgia, Alabama, Mississippi, Louisiana, Texas (Zapata, and Palmetto State Park near Ottine), Missouri, and Illinois. This subspecies replaces *mantis* in the Atlantic and Gulf coastal plain area. We have not seen it from Florida, but it has been recorded from St. Augustine by Johnson (1913, Bull. Amer. Mus. Nat. Hist. 32:86).

Ochthera melanderi Cresson

Ochthera melanderi Cresson, 1944. Notul. Nat. 135:8.

This species was described from Riverside, Palm Springs, and Palm Canyon, all in Riverside County, California. We have not seen it. The type is said to be in the Academy of Natural Sciences of Philadelphia, but Dr. K. W. Cooper was unable to find it there. Dr. Melander informs us that he has no specimens of it. It is said to be structurally similar to *humilis,* which in turn is somewhat similar to *cuprilineata.* The description of *melanderi* does not mention any black area on the face; the size is much greater than that of *baia.* The legs are too pale for *mantis,* and apparently also for *cuprilineata.* These three are the only species that we have seen that seem at all possible, and Cresson was certainly familiar with all of them. We are unable to fit the species into our key.

Ochthera pilosa Cresson

Ochthere pilosa Cresson, 1926. Tr. Amer. Ent. Soc. 52:255.

This was described from a single specimen from Alamogordo, New Mexico, and has apparently not since been recorded. We have seen one specimen, from the Chiricahua Mountains, Arizona (Kansas University collection). The name refers to the unusually long fine pilosity of the thorax and abdomen.

PELINA

Pelina Haliday, 1839. Ann. Nat. Hist. 3:407.
Telmatobia Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad. 1843:149.

The two genera listed above were both based on the European *Notiphila aenea* Fallén, which we have seen (specimens determined by Collin). The genus was treated by Cresson (1949, Tr. Amer. Ent. Soc. 74:257): we here present a new key to the species, and some additional distributional data.

The species are to be taken by sweeping, often in somewhat drier places than are frequented by most Ephydridae.

PELINA: *Key to the Nearctic Species*

1. Mesopleura largely smooth and polished; entirely black species; abdomen finely granulose on tergites 2 and 3 **aenescens** (Stenhammar)
   Mesopleura all or in large part pollinose or granulose; some yellow on tarsi 2
2. Mesonotum smooth, not strongly granulose ..... **compar** Cresson
   Mesonotum distinctly granulose or sculptured 3
3. Face longer than broad; head not twice as broad as high; penultimate section of fifth vein slightly bowed anteriorly just before posterior crossvein ..... **rudis** Cresson
   Face and head very broad, the face as broad as long, the head nearly twice as broad as high; penultimate section of fifth vein straight, diverging from fourth vein at a constant angle 4
4. Abdominal sculpturing in the form of wavy or zigzag linear rugae **truncatula** Loew
   Abdominal sculpturing in the form of transverse rugae, strongest on second and third tergites; all tergites smooth laterally **canadensis** Cresson

Pelina aenescens (Stenhammar)

Telmatobia aenescens Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad. 1843:210.
Pelina aenescens Haliday, 1856. Ins. Brit. Dipt. 3:345.

Cresson reported six specimens of this European species from Churchill, Manitoba. We have examined four specimens, from Manitoba, Michigan, and Wyoming.

Pelina canadensis Cresson

Pelina canadensis Cresson, 1934. Tr. Amer. Ent. Soc. 60:208.

Cresson recorded four specimens, from Manitoba, British Columbia, and Minnesota. We have examined four specimens, from Alaska, Saskatchewan, Wyoming, and California (Nevada County).

Pelina compar Cresson

Pelina compar Cresson, 1934. Tr. Amer. Ent. Soc. 60:207.

Cresson recorded 13 specimens from Manitoba, Colorado, Wyoming, Idaho, Washington, and Oregon. We have examined 11 specimens, from Washington, Oregon, and California (Modoc and Inyo counties).

Pelina rudis Cresson

Pelina rudis Cresson, 1940. Notul. Natur. 38:9.

Cresson recorded three specimens, from Michigan and Connecticut. We have examined 13 specimens, from British Columbia, Massachusetts, New Jersey, Minnesota, and California (Modoc County).

Pelina truncatula Loew

Pelina truncatula Loew, 1878. Zeits. ges. Naturw. 51:198.

Cresson recorded 450 specimens, from Canada and from most of the United States except the area southeast of the line of the Ohio and Mississippi Rivers. We have examined 261 specimens, from Ontario, Massachusetts, Indiana, Minnesota, Iowa, Nebraska, Kansas, Arkansas, Texas, Montana, Wyoming, Colorado, New Mexico, from all of the states west of the last four, and from Lower California, Mexico City, and the state of Guerrero, in Mexico. Cresson's records add New York, New Jersey, Ohio, Illinois, Michigan, and South Dakota to this list.

In general the bristles average somewhat shorter and thinner in eastern specimens, but we have been unable to devise a satisfactory separation into subspecies.

Subfamily NOTIPHILINAE

DICHAETA

Dichaeta Meigen, 1830. Syst. Beschr. 6:61.

The genotype is *Notiphila caudata* Fallén, a rather common Holarctic species, that is, according to our interpretation, the only Nearctic representative. The genus was treated by Cresson (1946, Tr. Amer. Ent. Soc. 72:230) in his account of the Notiphilinae, but he neglected to give the distinction between the two American forms; for that one needs to refer to his earlier paper (1917, Tr. Amer. Ent. Soc. 43:66).

Dichaeta seems to prefer the same habitat as most species of *Notiphila*—rushes and tall grasses along the edges of lakes, streams, and marshes; we have seen no specimens from saline or alkaline areas.

The two American forms, which we are treating as subspecies, may be separated as follows:

1. Crossveins, especially posterior one, somewhat clouded; abdomen somewhat pruinose ..... **caudata** subsp. **caudata** (Fallén)
   Crossveins not clouded; abdomen uniformly shining black, not pruinose **caudata** subsp. **atriventris** Cresson

Dichaeta caudata (Fallén)

Cresson (1917) remarked that he doubted if the two species recognized by him were distinct. Our observations indicate that they have the typical geographical relations of subspecies, and that the differences are slight and concern somewhat variable characters. Unfortunately, we have seen only two rather poorly preserved European specimens; we can, therefore, only follow Cresson in identifying the eastern form as typical *caudata*.

Dichaeta caudata subsp. **caudata** (Fallén)

Notiphila caudata Fallén, 1813. Handl. K. Svensk. Vet.-Akad. 34:249.
Dichaeta caudata Meigen, 1830. Syst. Beschr. 6:62.
Dirchaeta brevicauda Loew, 1860. Neue Beitr. 7:5.

Cresson reported this from Alaska to British Columbia, Ontario, Maine, south to Oregon, Utah, Missouri, and Florida. We have examined 122 specimens from Manitoba, Maine, Vermont, New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Michigan, Wisconsin, Minnesota, Iowa, Nebraska, Alabama, Lou-

isiana, Texas (Austin), and Washington. In the eastern states the species is much commoner northward.

Dichaeta caudata subsp. **atriventris** Cresson

Dichaeta atriventris Cresson, 1915. Ent. News 26:68.

Cresson recorded this from North and South Dakota, Colorado, New Mexico, and westward to California. We have examined 63 specimens, from British Columbia, North Dakota, Nebraska, Kansas, Colorado, New Mexico, Utah, Wyoming, Arizona, Nevada, California (south to San Diego County), Washington, and Orizaba, Mexico.

There thus appears to be a zone of overlapping between the two subspecies, roughly from British Columbia through Washington and Oregon, and then east and south through the Rocky Mountains and the western Plains region.

HYDRINA

Hydrina Desvoidy, 1830. Essai Myod., p. 794.
Philygria Stenhammar, 1844. Handl. K. Svensk. Vet.-Akad. 1843:154.

The type of *Hydrina* is *H. maculipennis* Desvoidy, that of *Philygria* is *Notiphila flavipes* Fallén; both are European. We have not seen them. The synonymy was discussed by Cresson (1930, Trans. Amer. Ent. Soc. 56:93), and the Nearctic species were later summarized by him (1944, *Ibid.* 70:177).

The species of this genus like those of *Pelina, Hyadina,* and some *Hydrellia,* are to be taken by sweeping—often in somewhat drier places than are frequented by most members of the family.

HYDRINA: *Key to the Nearctic Species*

1. Wings clouded on the crossveins, otherwise unspotted 2
   Wings with dark spots other than along the crossveins 3
2. Abdomen cinereous except apical segment of male .....**debilis** (Loew)
   Abdomen almost entirely shining .....**nigrescens** Cresson
3. Two dark crossbands in first posterior cell .....**dimidiata,** n. sp.
   No dark crossbands in first posterior cell .....**opposita** (Loew)

Hydrina debilis (Loew)

Philygria debilis Loew, 1861. Berl. ent. Zeit. 5:357.
Philygria fuscicornis Loew, 1862. Mon. Dipt. N. Amer. 1:155.
Hydrina debilis Slosson, 1902. Ent. News 13:8.

The two names applied by Loew represent easily distinguished forms, and both were generally listed until Cresson showed that they are the male and female of a single species. Cresson (1944) listed this as "a very abundant species except in the southeastern states." We have examined 759 specimens, from Ontario, Manitoba, Maine, Massachusetts, New York, New Jersey, Pennsylvania, the District of Columbia, North Carolina, Florida, Alabama, Mississippi, West Virginia, Ohio, Illinois, Michigan, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, Kansas, Texas, Wyoming, Colorado, New Mexico, Arizona, Utah, Montana, Idaho, Nevada, Washington, Oregon, and California (south to Los Angeles County). Johnson has recorded it also from New Hampshire, Vermont, and Connecticut. It is evidently to be expected in every state.

This species is often taken with *Pelina truncatula* and *Hyadina binotata;* like them it occurs throughout most of the United States, but is most frequent in the Plains region and the eastern part of the Rocky Mountains.

Hydrina dimidiata new species

Dull brownish black; third antennal segment yellowish below; legs brownish yellow, terminal tarsal segments darker. Granulose, except that the apical half of the abdomen (most of the fourth tergite and all of the fifth) is polished black. Halteres white.

Arista short pectinate. No orbitals, no postverticals; an inner and an outer vertical and an ocellar well developed. A row of short facials. Width of cheek about one-sixth height of eye.

A single median row of acrostichal hairs. One presutural dorsocentral, a postsutural one, and an interalar that is only slightly lateral to the dorsocentral line; all three of these arise from faintly brownish indistinct spots. No humerals or presuturals; two notopleurals, the posterior one remote from the notopleural suture. Scutellar disc flattened, bare. Lateral scutellars less than half length of apical ones.

Costal index about 1.3; fourth vein index about 1.1. There is a branch arising from the anterior side of the penultimate section of the fifth vein (presumably, as in *opposita*, there will be found to be individual variability in the branching of the veins). Wings clear, with distinct brown markings that are in the form of bands between the veins, rather than (as in *opposita*) spots along the veins with more or less distinct connections between opposite spots. Such bands are present as follows: two in marginal cell, four in submarginal, two in first posterior, two in discal; in addition both crossveins are clouded, as is the junction of the second and third veins.

Length about 1.8 mm.; wing, 1.7 mm.

Holotype and only specimen: male, Cheat Mountains, West Virginia, June (Carnegie Museum collection).

Hydrina nigrescens Cresson

Hydrina nigrescens Cresson, 1930. Ent. News 41:80.

Cresson recorded this species from Utah and Idaho. We have examined four specimens, from Alberta (near Banff) and Arizona (northwest corner of Gila County).

Hydrina opposita (Loew)

Philygria opposita Loew, 1861. Berl. ent. Zeit. 5:538.
Hydrina opposita Cresson, 1944. Tr. Amer. Ent. Soc. 70:177.

Cresson recorded this from "the Transition Zone of the northeastern and northwestern United States". We have examined 28 specimens, from Quebec, Ontario, Massachusetts, New York, New Jersey, Ohio, Wisconsin, and Minnesota. Loew described it from Pennsylvania, and Johnson has recorded it from New Hampshire, Vermont, and Rhode Island.

NOSTIMA

Nostima Coquillett, 1900. Canad. Ent. 32:35.
Philygriola Hendel, 1917. Deutsch. ent. Zeit., p. 42.

The genotype of *Nostima* is *N. slossonae* Coquillett, a species that we have not seen; that of *Philygriola* is *Notiphila picta* Fallén. Cresson recognized *Philygriola* as a subgenus; we do not feel that it is sufficiently distinct.

The genus was treated by Cresson (1944, Tr. Amer. Ent. Soc. 70:176), but that account omitted *N. slossonae,* and we have now seen another species (*N. gilvipes*) from Florida, and have two new forms to describe.

The species of this genus are all uncommon in collections. We have taken so few that we can make no valid generalizations about their habits; several of our specimens were taken at lights.

NOSTIMA: *Key to the Nearctic Species*

1. Wings with definite white or clear spots other than along the crossveins ...2
   Wings unspotted, or at most with whitish borders to crossveins 3
2. Wings with five rounded white spots, none of them in the marginal cell **quinquenotata** Cresson

With two white spots in marginal cell, and other white areas not arranged to give a total of five distinct rounded white spots **slossonae** Coquillett

3. Scutellum velvety; mesonotum with whitish stripes just lateral to dorsocentral lines 4

Scutellum not velvety; no mesonotal white stripes ...**gilvipes** (Coquillett)

4. Second vein close to costa, making the marginal cell less than ¼ width of submarginal; mesonotal stripes sharply distinct, extending onto margin of scutellum .....**approximata,** n. sp.

Marginal cell at least ⅓ width of submarginal; mesonotal stripes less distinct, especially posteriorly 5

5. Fourth vein index about 4.0; acrostichal area not at all shining **picta** (Fallén)

Fourth vein index at least 5.0; acrostichal area somewhat shining **scutellaris** Cresson.....a

a. Legs yellow, at most faintly brownish .....subsp. **scutellaris** Cresson

Legs brownish black, tarsi brown .....subsp. **occidentalis,** n. subsp.

Nostima approximata new species

Dark brown; third antennal segment yellowish below; palpi yellow; legs yellow, knees and terminal tarsal segments slightly brownish; abdomen shining black, with lateral silvery white spots on third and fourth tergites. Frontal triangle opaque; orbits white, dark velvety area between them and triangle. Face and cheeks with whitish pollinosity visible from certain angles. Mesonotum velvety, darker posteriorly, scutellum also velvety, and almost black. Lateral white stripes, outside the dorsocentral lines, very distinct, sharply margined, continuous with the white lateral edges of scutellum.

Arista short pectinate. An outer and an inner vertical and an ocellar well developed; one very minute hair-like orbital. Facials short, thin. No humerals; one (the posterior) notopleural, remote from the notopleural suture; one postsutural dorsocentral; one interalar, only slightly lateral to dorsocentral line; a strong apical pair of scutellars, and a lateral pair about half as long. The mesonotum with only a few weak scattered hairs lateral to the dorsocentral lines.

Wings somewhat smoky, veins dark. Costal index about 0.7; fourth vein index about 5.5. Second vein nearly straight, close to costa, making marginal cell at its widest point less than one-fourth the width of submarginal at level of posterior crossvein. Fourth vein strongly curved posteriorly near its apex. Fifth vein ending well before wing margin.

Length about 1.7 mm., wing about 1.5 mm.

Holotype, Burbank, Oklahoma, September 13, 1952, deposited in the Academy of Natural Sciences of Philadelphia.

A specimen that lacks head and wings, and therefore cannot be identified with certainty, is probably conspecific; it is from Woods Hole, Massachusetts.

Nostima gilvipes (Coquillett)

Hydrellia gilvipes Coquillett, 1900. Porc. U. S. Nat. Mus. 22:261.
Nostima immaculata Cresson, 1918. Tr. Amer. Ent. Soc. 44:49.
Nostima gilvipes Cresson, 1941. Notul. Naturae 78:3.

This species was described from Porto Rico; Cresson's material was from Costa Rica. The synonymy is due to Cresson. We have seen two specimens; one from the state of Vera Cruz in Mexico, and the other from Royal Palm Park, Florida (Cornell University collection).

Nostima picta (Fallén)

Notiphila picta Fallén, 1813. Handl. K. Svensk Vet.-Akad. 34:254.
Nostima picta Cresson, 1930. Tr. Amer. Ent. Soc. 56:101.

This species was described from Europe, and was recorded by Cresson (1944) from " a few specimens taken in the Northwestern States " and (1949) from New York. We are inclined to question the eastern record, since Cresson's accounts suggest the possibility of confusion with *N. scutellaris*. We have seen two specimens from the mountains of California (Tulare and Fresno counties).

Nostima quinquenotata Cresson

Nostima quinquenotata Cresson, 1930. Ent. News 41:79.

Cresson (1944) recorded this " from Maryland to Florida, westward to Michigan and Kansas ". We have examined 15 specimens, from Florida, Georgia, Alabama, Louisiana, Kansas, and Texas (Austin, Ottine).

Nostima scutellaris Cresson

There are two forms, that we consider to be subspecies, as follows:

Nostima scutellaris subsp. **scutellaris** Cresson

Nostima scutellaris Cresson, 1933. Ent. News 44:68.

Cresson (1942) recorded this from " east of the Rocky Mountains and in Arizona, but apparently not in the more southeastern portion of the United States." Since Cresson did not recognize the western subspecies, the identity of the Arizona material is doubtful. We have examined 13 specimens, from New York City,

Pennsylvania, Minnesota (Houston County), Iowa, Alabama (Mobile County), Texas (Austin), and the state of Vera Cruz, Mexico. The New York specimen was taken in a greenhouse; those from Texas were taken at a light.

Nostima scutellaris subsp. **occidentalis,** new subspecies

Closely resembling typical *scutellaris,* except that the legs are dark brown, almost black, slightly paler on the tarsi.

Holotype, Pasadena, California, March 15, 1953, deposited in the Academy of Natural Sciences of Philadelphia.

One paratype, same locality, April 7, 1953. Both specimens were taken by sweeping a city lawn and garden. During the same period many other collections were made in the same place, without finding any *Nostima.* There were hundreds of specimens of *Hydrellia griseola* (Fallén); the next most frequent Ephydridae were *Psilopa varipes* Coquillett and *P. compta* (Meigen); a few *Hydrina debilis* (Loew) were also taken.

Nostima slossonae Coquillett

Nostima slossonae Coquillett, 1900. Canad. Ent. 32:35.
Philygria calverti Cresson, 1914. Ent. News 25:247.

This was described from Florida. Cresson (1947, Tr. Amer. Ent. Soc. 73:42) recorded it from Costa Rica, Paraguay, and Brazil, and in the same paper he noted the above synonymy. We have not seen this species.

Subfamily Psilopinae

ASMERINGA

Asmeringa Becker, 1903. Mitt. Zool. Mus. Berlin 2:174.

The genotype is *A. inermis* Becker. It is the only species of the genus that we have found recorded, and it appears to be known only from the type locality, on the coast of the Mediterranean Sea, near Alexandria, Egypt. We have a second species, from California.

Asmeringa lindsleyi new species

Cinereous gray, dark; tarsi brownish, halteres white.

Antennae in deep foveae; arista short-pubescent above and below. Two short facial bristles, all other head bristles short and not clearly distinct from

small hairs; one proclinate and two reclinate orbitals, two verticals, a series of intrafrontals, and an apical spine on the second antennal segment can be made out. Mouth opening very large; clypeus narrow. Face nearly perpendicular, flat and very narrow between the antennal foveae. Frontal triangle long. Eyes small, oblique, distinctly hairy. Cheek one third vertical height of eye. Lower posterior corner of head enlarged.

All thoracic and abdominal bristles absent or weak and scarcely distinguishable from small hairs. Anterior notopleural situated near posterior one, which is remote from the notopleural suture. Thorax and abdomen elongate, narrow, and rather flattened.

Wings milky white, veins brownish. Costal index about 4.0 (less in the paratype); fourth vein index about 2.6. Third and fourth veins slightly divergent apically.

Length 1.7 mm., wing 1.5 mm.

Type, Trona, San Bernardino County, California, March 31, 1953. Deposited in the Academy of Natural Sciences of Philadelphia.

One paratype, (teneral), same locality as type (April 29, 1950. D. L. Lindsley). Both specimens were taken beside flowing water on the salt flats northeast of the town, in company with large numbers of *Ephydra hians* Say, *Scatella dichaeta* Loew, *S. salinaria,* n. sp., and smaller numbers of *Ephydra cinerea* Jones, *Ptilomyia alkalinella* (Cresson), *P. occidentalis* n. sp., and *Gymnopa bidentata* Cresson. This is the type locality for both of the new species mentioned.

The generic reference is not open to serious doubt. The description and figures of *A. inermis* Becker (1926, Lindner, Flieg. pal. Reg. 11:103) suggest that that species must be very similar to *A. lindsleyi.* The most significant differences between *lindsleyi* and the description of *inermis* are that the latter is stated to have no bristles on the face or cheek, and that its costal index is only a little greater than 1.0. The figure of the head of *inermis* shows great similarity to *lindsleyi,* the arista has ventral as well as dorsal branches in both species, the size and color are very similar, and other resemblances are also present.

ATHYROGLOSSA

Athyroglossa Loew, 1860. Neue Beitr. 7:12.
Ochtheroidea Williston, 1896. Tr. Ent. Soc. London, p. 401.
Parathyroglossa Hendel, 1931. Bull. Soc. R. Ent. Egypte 15:68.

The genotype of *Athyroglossa* is *Notiphila glabra* Meigen; that of *Ochtheroidea* is *O. atra* Williston; that of *Parathyroglossa* is *Athyroglossa ordinata* Becker. We have seen all three. Cresson (1942, Trans. Amer. Ent. Soc. 68:106) recognized *Parathyroglossa* as a distinct genus; however, several Neotropical species serve to bridge the gap between *Athyroglossa* and *Parathyroglossa,* and we feel that the latter is, at most, a poorly marked subgenus. The keys given by Cresson are adequate for identification, but we have constructed a new one since we have added a new species and since it seems more convenient to include both subgenera in one key.

The species of the genus are found most often along the banks of fresh-water streams, more rarely along lake shores; we have seen no specimens from saline or strongly alkaline areas.

ATHYROGLOSSA: *Key to the Nearctic Species*

1. Acrostichal hairs in about six sparse rows; mesonotum mostly shining Subgenus **Parathyroglossa**.....**ordinata** Becker
   Acrostichal hairs more numerous, irregular; mesonotum with brown pollinose or granulose appearance ....Subgenus **Athyroglossa**.....2
2. Halteres blackish; mid and hind tibiae black or yellow 3
   Halteres whitish; mid and hind tibiae yellow 5
3. Fore tibiae black, the others yellow .....**granulosa** (Cresson)
   All tibiae black 4
4. Face shining in middle, with whitish pruinose areas on each side, these continuous with whitish areas of cheek .....**glabra** (Meigen)
   Whitish area forming a broad transverse band across lower half of face, continuous with whitish areas below eyes .....**transversa,** n. sp.
5. Face broad, polished, with a fairly evident transverse hump below antennal foveae .....**melanderi** (Cresson)
   Face narrower, polished, rather evenly convex over the entire surface **glaphyropus** Loew

Subgenus **Parathyroglossa** Hendel

Athyroglossa (Parathyroglossa) ordinata Becker

Athyroglossa ordinata Becker, 1896. Berl. ent. Zeits. 41:135.
Parathyroglossa ordinata Hendel, 1931. Bull. Soc. R. Ent. Egypte 15:68.

Cresson (1942, Tr. Amer. Ent. Soc. 68:106) listed this European species as "scarce in the north and west portion of the United States." We have examined 62 specimens, from New York, Minnesota, Illinois, Texas (Fort Davis), New Mexico, Ari-

zona, Wyoming, Colorado, California (Humboldt County), and Washington. Cresson (1922, Tr. Amer. Ent. Soc. 47:331) listed these additional localities: New Hampshire, Vermont, New Jersey, Maryland, and Idaho.

Subgenus **Athyroglossa** Loew

Athyroglossa (Athyroglossa) glabra (Meigen)

Notiphila glabra Meigen, 1830. Syst. Beschr. 6:69.
Athyroglossa glabra Loew, 1860. Neue Beitr. 7:12.

We have examined two European specimens (determined by Kertesz), and 61 Nearctic ones, from Washington, California (Sonoma, Humboldt, Kern counties); Idaho, Wyoming, Colorado, Arizona, New Mexico, and Minnesota. Cresson (1922) also listed Oregon and New York.

Athyroglossa (Athyroglossa) glaphyropus Loew

Athyroglossa glaphyropus Loew, 1878. Zeit. ges. Naturw. 51:197.

The species was described from Texas. We have seen 114 specimens, from Washington, California (Riverside County), Colorado, Arizona, Texas, Oklahoma, Arkansas, Missouri, Illinois, Tennessee, Louisiana, Alabama, Georgia, Florida, South Carolina, Virginia, New Jersey, Pennsylvania, Mexico, and Brazil. Cresson (1922) also recorded it from New York, District of Columbia, Maryland, Costa Rica, Panama, Bolivia, and Peru.

Cresson (1942) recorded a single specimen of the Neotropical *A. laevis* (Cresson) from Arizona. We have not seen any material that we can so identify; we are inclined to doubt a record based on one specimen in view of the statement of Cresson (1946, Tr. Amer. Ent. Soc. 71:133) that *A. laevis* is "not always easily separated from *glaphyropus,* and may not be distinct."

Athyroglossa (Athyroglossa) granulosa (Cresson)

Ochtheroidea granulosa Cresson, 1922. Tr. Amer. Ent. Soc. 47:341.
Athyroglossa granulosa Cresson, 1942. Tr. Amer. Ent. Soc. 68:107.
Athyroglossa granulosa Cresson, 1944. Tr. Amer. Ent. Soc. 70:160.

We have seen 21 specimens, from Massachusetts, New Jersey, Pennsylvania, Ohio, Tennessee, Alabama, Illinois, Minnesota, Iowa, Nebraska, and Oklahoma. Johnson (1925) recorded it from Vermont. Cresson's accounts give the following additional

records: California, New York, District of Columbia, Maryland, Virginia, Indiana, Grenada, Virgin Islands.

Athyroglossa (Athyroglossa) melanderi (Cresson)

Ochtheroidea melanderi Cresson, 1922. Tr. Amer. Ent. Soc. 47:339.
Athyroglossa melanderi Cresson, 1942. Tr. Amer. Ent. Soc. 68:106.

The species was described from eight specimens from Stanford University, Santa Clara County, California. We have seen ten specimens, from New Mexico, Arizona, and California (Tulare, Riverside, and San Diego counties).

Athyroglossa (Athyroglossa) transversa new species

Black, mesonotum and front brownish pollinose, lower face with a broad transverse whitish pruinose area; halteres black.

Front black with thin brownish pollinosity, a narrow but elongate ocellar triangle more shiny; one pair of proclinate and one pair of reclinate orbitals, their bases close to each other; one pair of proclinate ocellars, their bases just anterior to level of anterior ocellus. Inner and outer verticals strong, postverticals minute. Antennae black, second segment with a prominent proclinate spine and other strong bristles; third segment about as long as wide, the arista with about five dorsal branches. Face depressed between antennae, then broadly elevated into a transverse hump, below this gradually sloping to oral margin; upper side of facial hump shining black, as is the clypeus, and with whitish pollen under antennae and over the broad lower face, including the facial orbits and extending below the eyes a short way, leaving the lower and posterior part of cheek shining black. A row of about five facial bristles on each side, decreasing in size toward oral margin.

Disc of mesonotum and scutellum black, with somewhat scattered or rather thick brownish pollinosity; no true dorsocentrals, the interalars placed in line with basal corners of scutellum; scutellum with hairy disc and a pair each of lateral and apical bristles. Pleurae mostly shining black, with brownish hairs above fore coxa and a small pollinose area near upper posterior corner of mesopleura. Posterior notopleural bristle about four times as far from the notopleural suture as is the anterior bristle. Legs mostly black, tarsi yellowish except on apical one or two segments (variable); tibiae strongly whitish pruinose on outer surfaces.

Abdominal tergites shining black, with a small amount of brownish pollen along lateral margins.

Body length 2.0-2.2 mm. Wings dusky, appearing rather long and narrow. Costal index 3.7-3.9; fourth vein index about 2.1; wing length about 2.2. mm.

Holotype, Glenwood, New Mexico, June 8, 1951, deposited in the Academy of Natural Sciences of Philadelphia.

Seven paratypes: six from New Mexico (Glenwood, Silver City), and one from Utah (Zion National Park—Univ. Minn. collection). The species is found along the banks of mountain streams.

ATISSA

Atissa Haliday, 1839. Ann. Nat. Hist. 3:404.
Parephydra Coquillett, 1902. Jour. N. Y. Ent. Soc. 10:183.

The genotype of *Atissa* is *Ephydra pygmaea* Haliday, that of *Parephydra* is *P. humilis* Coquillett—here considered a synonym of *A. pygmaea.* The genus was treated by Cresson (1942, Tr. Amer. Ent. Soc. 68:110); of the three species there listed we have been able to recognize only two. However, our observations indicate that both of these have a much wider distribution than is given by Cresson.

The species, which are among the smallest in the family, are most often found in saline environments. In the eastern states they are both strictly sea-beach forms; in the west they also occur inland. The two forms may be separated as follows:

1. Mesonotal setulae, between the interalars, in six rows; disc of scutellum distinctly hairy ..... **litoralis** (Cole)
   Setulae in four rows between the interalars; disc of scutellum with only a few small hairs ..... **pygmaea** (Haliday)

Atissa litoralis (Cole)

Allotrichoma litoralis Cole, 1912. Rep. Laguna Marine Lab. 1:160.
Atissa hepaticoloris Cresson, 1929. Tr. Amer. Ent. Soc. 55:178.
Atissa litoralis Cresson, 1942. Tr. Amer. Ent. Soc. 68:110.

Cresson (1942) listed this as "a scarce western species." We have examined the type (Pomona College collection), and 64 additional specimens, from British Columbia, Oregon, California, North Dakota, Utah, Arizona, New Mexico, Missouri, Lower California, and from the Atlantic and Gulf seacoasts in New Hampshire, Massachusetts, New York, Florida and Texas.

Atissa pygmaea (Haliday)

Ephydra pygmaea Haliday, 1833. Ent. Mag. 1:174.
Atissa pygmaea Haliday, 1839. Ann. Nat. Hist. 3:404.
Parephydra humilis Coquillett, 1902. Jour. N. Y. Ent. Soc. 10:183.
Atissa humilis Cresson, 1942. Tr. Amer. Ent. Soc. 68:110.
(?) *Atissa atlantica* Cresson, 1926. Tr. Amer. Ent. Soc. 52:249.

Cresson (1929, Tr. Amer. Ent. Soc. 55:176) listed *humilis* as a form of *pygmaea;* in 1942 he listed it as a distinct species. We find the American forms somewhat variable, and some specimens we cannot distinguish from our four British specimens determined by Collin as *pygmaea.* Cresson (1942) separated *atlantica* by color characters, which do not agree wholly with the original description of *atlantica;* our series is variable, and we find no consistent difference associated with geographical origin. The original description of *atlantica* indicates narrower cheeks than are typical for *pygmaea,* but our observations indicate that this character is also variable in series that seem otherwise identical; the variations are also nearly continuous.

Atissa humilis was described from Arizona; Cresson (1942) listed it as " a rare species found in South Dakota, Colorado, Arizona, and New Mexico." *A. atlantica* he recorded only from New Jersey. We have examined 96 Nearctic specimens, from New Hampshire, Massachusetts, Alabama, Mississippi, Louisiana, Missouri, Arkansas, Nebraska, Oklahoma, Texas, New Mexico, Nevada, Arizona, and California (Imperial County to San Luis Obispo and San Bernardino counties).

DIPHUIA

Diphuia Cresson, 1944. Notul. Naturae 135:3.

This genus has been known only from a single species, *D. anomala* Cresson, that has been recorded only from Panama. The present is the first record from the Nearctic region. In Cresson's key to the Nearctic Psilopinae (1942, Trans. Amer. Ent. Soc. 68:103) the genus will go to his tribe Atissini, where it may be distinguished by its shining black color and by the conspicuous sharply distinct white-pruinose lines on the face. Superficially it resembles a *Psilopa.*

Diphuia nitida new species

Shining black; apices of tibiae, and tarsi except terminal segments, yellow. Facial area with sharply marked white pruinose lines; a narrow margin along the eye, a triangle with one side along the oral margin and the other two meeting in a pruinose spot that includes the antennal bases; there is also a median pruinose area extending a short distance up from the oral margin. Extensor surfaces of tibiae whitish cinereous.

Antennae missing in the type. Ocellars strong, arising at the level of the posterior edge of the median ocellus, appreciably posterior to the level of the two orbitals; the latter arising from the same level, the proclinate one nearer the eye. Postverticals well developed, divergent. Two evident facials. Face not carinate, in profile receding below. Clypeus small.

One humeral; two notopleurals, the posterior one remote from the notopleural suture. No dorsocentral or acrostichal bristles, the interalar strong. A moderately well-developed row of postflexor bristles on first femur.

Wings brownish, pointed. Costal index about 2.0; fourth vein index about 2.5.

Length, about 1.7 mm.

Type and only specimen: male, Douglaston, Long Island, New York (just inside the limits of New York City), August 17, 1952. Deposited in the Academy of Natural Sciences of Philadelphia. This specimen was taken quite near the shore of Long Island Sound, but it is uncertain whether it was in a salt marsh or only near one. Unfortunately its unusual nature was not recognized at the time, so no special effort was made to collect further material.

Through the kindness of Dr. W. W. Wirth we have been able to compare this specimen with three specimens of *D. anomala* from Panama (from the United States National Museum), all determined by Cresson and one of them a paratype. The two species are very similar, but *nitida* may be distinguished easily by its shining bluish-black mesonotum, with finer and less obvious hairs, as compared to the duller *anomala* which has a slightly brownish cast. The tarsi are also brighter yellow in *nitida*.

GLENANTHE

Glenanthe Haliday, 1839. Ann. Nat. Hist. 3:404.

The genotype is the European *G. ripicola* Haliday, which we have seen (determined by Kertesz and by Collin). There are two Nearctic species, that may be separated as follows:

1. Wings hyaline, without pattern; antennae gray .....**litorea** Cresson
   Wings with two broad, poorly defined dark fasciae, one including the posterior crossvein and one nearer wing apex; antennae mostly yellowish .....**fascipennis**, n. sp.

Glenanthe litorea Cresson

Glenanthe litorea Cresson, 1925. Ent. News 36:166.

Cresson (1942, Tr. Amer. Ent. Soc. 68:107) recorded this species as " ranging northward east of the Rocky Mountains, and in

Alaska." We have examined 59 specimens, from Massachusetts, New York, Alabama, and Texas (south to the Brownsville region). With the exception of six specimens taken at Austin, Texas (Sept.-Oct.) all our material has been collected in coastal salt marshes. The type series, from New Jersey, is also recorded as coming from a salt marsh.

Glenanthe fascipennis new species

Quite similar to *G. litorea*, differing mainly in the wing pattern, pale antennal color, and smaller body size.

Front and mesonotum largely brownish with a rusty cast; face, cheeks, pleurae, abdomen, and legs whitish pollinose to whitish dusted, the face perhaps more silvery than in *litorea*. The head bristles of the two species are quite similar, although in *litorea* the pair of proclinate frontals (anterior to, and lateral of, the anterior ocellus) are more strongly developed than in *fascipennis*. Antennae mostly yellowish, the third segment darker on its upper apical corner; arista pale at base, a little longer than in *litorea*. As in *litorea*, there are no true dorsocentral bristles, the enlarged prescutellars and the interalars being the only bristles on the disc of the mesonotum; posterior notopleural bristle far removed dorsally from the suture, and there is a smaller hair-like bristle dorsal to the anterior notopleural, also present in *litorea*. Femora and tibiae grayish with whitish dust, tarsi all yellowish. Mesopleura with several posterior bristles; a single stout dorsal sternopleural.

Wings with poorly defined dark gray fasciae: one across middle of wing broadly including posterior crossvein and extending along fifth vein in both directions, and a second dark area nearer wing tip; marginal cell grayish throughout; anterior crossvein clouded, this cloud included in the larger median fascia or somewhat separated from it. The non-darkened areas of the wing contrastingly paler, yellowish white; three such paler areas are especially evident: one at wing base, one between the two dark fasciae, and one at wing apex, particularly between apices of third and fourth veins. Costal index (as in *litorea*) 4.0 or more; fourth vein index about 2.0 (about 2.2 in *litorea*). There is sometimes a short spur vein into the submarginal cell from the second vein, nearly opposite the posterior crossvein.

Body length, 1.5 mm.; wing, 1.5 mm.

Holotype, Galveston, Texas, April 11, 1952, deposited in the Academy of Natural Sciences of Philadelphia.

Seventeen paratypes, from Freeport (September), Galveston (April), and Salt Creek (Aransas Co., June) Texas. All these specimens were taken on rather barren, moist coastal saline areas on which *litorea* was also present.

PARATISSA

Paratissa Coquillett, 1900. Canada. Ent. *32*:36.

This genus, which is near *Discocerina,* was overlooked by Cresson in his accounts of the Psilopinae (1942, Trans. Amer. Ent. Soc. 68:101; 1944, *Ibid.* 70:159; 1946, *Ibid.* 72:109). It was based, by Coquillett, on *Drosophila pollinosa* Williston; as pointed out by Sturtevant (1923, Amer. Mus. Novit. 76:10), the type of this species is lost and the description is hardly sufficient to make its identification quite certain. However, it seems advisable to accept Coquillett's identification of the species—especially since Williston (1908, Man. N. Amer. Dipt., p. 307) later recognized the genus as a valid member of the Ephydridae.

Paratissa will key correctly if one uses Williston (loc. cit.) or Curran (1934, N. Amer. Dipt. p. 349). Using Cresson's papers it will go to his "Tribe Discocerini", although confusion may arise from the presence of three pairs of well-developed bristles on the median area of the front. We interpret the posterior pair (divergent, and arising between the posterior ocelli) as the postverticals. The next anterior pair (ocellars) are convergent, and arise just anterior to the anterior ocellus and at the same distance from the median line as are the ocelli. The intrafrontal (most anterior and largest) pair are parallel, directed forward, and arise from points just nearer the median line than are the bases of the second pair, and about as far anterior to the second pair as the latter are to the posterior. These bristles will serve to identify the genus, which has the general aspect of a large brownish *Discocerina.*

We know of only the following species.

Paratissa pollinosa (Williston)

Drosophila pollinosa Williston, 1896. Tr. Ent. Soc. London, p. 414.
Paratissa pollinosa Coquillett, 1900. Canad. Ent. *32*:36.

We have examined 19 specimens, from Lake Worth and Coconut Grove, Florida. The type came from St. Vincent, West Indies. Coquillett's material was from Biscayne Bay, Florida, and Johnson has recorded it from Punta Gorda, Florida (1913, Bull. Amer. Mus. Nat. Hist. 32:89) and from Bermuda (1913, Ann. Ent. Soc. Amer. 6:452). All these localities are coastal, and one of Johnson's Bermuda records states "on seaweed."

PELIGNELLUS, new genus

Apparently related to *Pelignus* and *Atissa*. With a minute divergent postvertical pair; a minute ocellar, inserted posterior to anterior ocellus; at least one larger divergent intrafrontal, anterior to anterior ocellus; three short divergent orbitals, the posterior one reclinate and inserted at the level of the anterior ocellus, the two anterior ones proclinate; a short but distinct bristle on second antennal segment; two or three short facials. Eye small, elliptical, its long axis nearly horizontal; cheek broader than vertical height of eye. Face bare, excavated in profile, oral margin prominent; clypeus not visible. Antenna short, third segment broader than long. Arista short, thick at base, with two short apical dorsal branches. No dorsocentral bristles, interalar present. Mesonotal hairs sparse, in two acrostichal and two dorsocentral rows. Scutellum with two subequal pairs of marginal bristles. Two notopleurals, the anterior placed far posteriorly, the posterior remote from the notopleural suture. Legs without conspicuous bristles. Costa reaches apex of fourth vein.

Genotype: *Pelignellus subnudus,* new species.

Pelignellus subnudus new species

Cinereous gray; antennae, palpi, and tarsi yellowish; halteres white. A distinct pointed frontal triangle, reaching anterior margin of front. Mesonotum slightly brownish. Bristles all short. A single intrafrontal. Hairs and bristles dark brown to black, except those on mesopleura, abdomen, and some of those on legs, which are whitish.

Wings clear, posterior crossvein slightly clouded. Veins dark brown. Costa weakly pectinate. Costal index about 1.1; fourth vein index about 2.0.

Length about 1.4 mm.; wing about 1.4 mm.

Holotype, Corona del Mar, Orange County, California, March 19, 1951, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes: 33, all from the same locality as the type; one, September 16, 1949, the others same date as type. All specimens were taken in saline areas along the shore of Newport Bay.

This species resembles *Atissa* and *Pelignus,* to which it is evidently related; it also suggests *Asmeringa* more than does any other genus known to us. We have submitted paratype material of *subnudus* to Mr. J. E. Collin, who felt that it was best considered an aberrant *Atissa.* While we dislike the multiplication of genera, we cannot agree that this form can reasonably be put in that genus, nor in any other known to us.

Through the kindness of Dr. W. W. Wirth, we have been able to examine two undescribed species of *Pelignellus,* both from

Panama. While we are not describing these species here, the examination has led to slight modifications in the above descriptions.

PTILOMYIA

Ptilomyia Coquillett, 1900. Proc. U. S. Nat. Mus. 22:261.
Atissiella Cresson, 1918. Tr. Amer. Ent. Soc. 44:55.

The genotype of *Ptilomyia* is *P. enigma* Coquillett from Porto Rico; Cresson (1947, Trans. Amer. Ent. Soc. 73:35) stated that he did not know *enigma* but that the genus *Ptilomyia* was probably near *Atissiella,* "if not synonymous with it." The genotype of *Atissiella* is *A. setulosa* Cresson from Costa Rica; we have not seen it but we have some doubts as to its distinctness from *enigma. Alocatissa* Hendel, from Argentina, is, according to Cresson (1946, Trans. Amer. Ent. Soc. 71:140), also a probable synonym of this genus. *Ptilomyia* was first reported from the United States by Wheeler (1951, Pan-Pac. Ent. 27:92) who, however, failed to recognize *Atissiella* as a synonym.

PTILOMYIA: *Key to the Nearctic Species*

1. Wings with distinct pattern; acrostichal hairs clearly in four rows between the interalar lines ..... **mabelae** (Cresson)
   Wings hyaline, with at most clouds over the crossveins; acrostichals in four or six rows 2
2. With prominent bristles at about the sutural level in both dorsocentral and median acrostichal rows; abdomen rather shining black; ventral branches of arista usually clearly evident though small
   enigma Coquillett
   Without sutural acrostichal bristles and with sutural dorsocentral bristles only in *lobiochaeta*; abdomen pollinose; ventral branches on arista scarcely evident 3
3. Cheeks distinctly broader than width of third antennal segment; face uniformly grayish-white pollinose; oral margin with two bristles on each side, not counting the upturned pair nearer center of face nor the buccal bristle; costal index over 1.0; body length up to 2 mm.
   occidentalis, n. sp.
   Cheeks narrower than width of third antennal segment; face grayish to brownish; oral margin with two or more bristles on each side; body length rarely as much as 1.5 mm. 4
4. Oral margin with 3-5 bristles on each side, not counting the upturned pair nearer center of face nor the buccal bristle; costal index over 1.0; tarsi mostly black; prescutellars usually closer to scutellum than they are to each other ..... **alkalinella** (Cresson)

Oral margin with only two bristles on each side; costal index 1.0 or less; tarsi often somewhat yellowish; prescutellars about as far from each other as from scutellum 5

5. Acrostichal hairs in six well-defined rows between the interalar lines, the hairs all about equal in size .....**pleuriseta** (Cresson)

Acrostichals in about six very irregular rows, varied in size, with one or more in the dorsocentral rows enlarged and bristle-like at about the sutural level .....**lobiochaeta,** n. sp.

Ptilomyia alkalinella (Cresson)

Atissiella alkalinella Cresson, 1942. Tr. Amer. Ent. Soc. 68:112.

The species was described from Nevada and Washington. We have seen 11 specimens, all from California (Mono, Inyo, and San Bernardino counties).

Ptilomyia enigma Coquillett

Ptilomyia enigma Coquillett, 1900. Proc. U. S. Nat. Mus. 22:262.
Atissiella falsisetae Cresson, 1942. Tr. Amer. Ent. Soc. 68:110.

The type of *enigma* was from Porto Rico; *falsisetae* was described from a male from Pennsylvania. In his account of the Neotropical Psilopinae, Cresson (1946) overlooked *P. enigma,* and later (1947) stated that he did not know the species. We are convinced, however, that *falsisetae* is a synonym of *enigma.* The status of *Atissiella setulosa* Cresson (1918, Trans. Amer. Ent. Soc. 44:55), from Costa Rica, is less certain. The original description was quite brief and, according to Cresson (1946), applied equally well to *falsisetae.* Although he presented a redescription of *setulosa* in his 1946 paper, we are not yet certain of its distinctness from *enigma.*

We have examined 138 preserved specimens of *enigma,* from Illinois, Missouri, Nebraska, Oklahoma, Arkansas, Louisiana, Texas, Arizona, California (Kern County), state of Vera Cruz, Mexico, and state of Para, Brazil. Most of our specimens have come from muddy areas along fresh-water streams and lakes; at Austin, Texas, we have found it to be a very common species during the hot summer months.

Ptilomyia lobiochaeta new species

Front rusty brown pollinose, blackish anteriorly in a semi-circular area around antennal bases; proclinate ocellars strong; one strong reclinate orbital and two weak proclinate ones, the anterior one stronger. Antennae

mostly yellow, the arista dark, with about five rather long dorsal branches and a few minute pale ventral ones visible only under very high magnification. Face grayish pollinose, the median elevation rather prominent, with the pair of upturned bristles below, and laterally two oral bristles with a few smaller hairs just dorsal to the first of the orals; buccal bristle strong; cheeks gray pollinose, scarcely as broad as width of third antennal segment. Palpi pale.

Disc of mesonotum and scutellum brownish pollinose becoming gray over humeri and most of pleura. Mesonotal bristling irregular; prescutellars strong, about as far apart as their distance from the scutellum; acrostichal hairs irregularly four to six rowed, those of the median two rows larger than the remainder, those of the other rows sparse and small; in each dorsocentral row there is one stout bristle, equalling the prescutellars in size, slightly presutural in position (see remarks below on a variation). Scutellum with scattered hairs on disc and margin in addition to the four larger bristles. Humeral, presutural, and the two notopleural bristles of average size. Mesopleura with bristles and hairs, sternopleura with a single strong bristle and a few scattered hairs. Legs mostly dark but the tarsi much paler and yellowish except at apex.

Abdomen uniformly grayish pollinose with a faint brownish cast, a bit glossy when viewed from certain angles. All abdominal hairs short. Wings with faint brownish color, posterior crossvein with a semi-distinct brown cloud. Costal index about 1.0; fourth vein index about 1.6.

Body length 1.0-1.3 mm. (in pinned specimens); wings, about 1.0 mm.

Holotype, Palmetto State Park, near Ottine, Texas, October 7, 1950. Three paratypes, Austin, Texas (September, October). In addition we have two specimens (not included in the type series) from Patagonia, Arizona (June), which probably belong to this species but in which there are two bristles in each dorsocentral row, one of them behind the sutural level, and the legs are a bit darker. Holotype deposited in the Academy of Natural Sciences of Philadelphia.

Ptilomyia mabelae (Cresson)

Atissiella mabelae Cresson, 1926. Tr. Amer. Ent. Soc. 52:253.

Cresson's type came from Pennsylvania, and he later (1946, Trans. Amer. Ent. Soc. 71:139) reported it from Honduras. We have examined 20 specimens from Florida, Alabama, and Texas (west to Houston and Austin).

Ptilomyia occidentalis new species

Front densely grayish brown pollinose; proclinate ocellars long; orbital areas not differentiated, with a strong reclinate bristle and two proclinate

hairs, the anterior one stronger, the posterior one about aligned with the reclinate. Antennae dark, blackish, the arista dark, with 5-6 dorsal branches. Face rather uniformly gray to whitish pollinose, the median elevation low, with an upturned bristle on each side near its ventral termination, and with two oral bristles lateral to these; just above this bristle row is a small cluster of 4-5 smaller hairs. Buccal bristle strong; cheeks unusually broad, 1½-2 times the width of the third antennal segment. Palpi dark.

Disc of mesonotum and scutellum evenly gray pollinose or with a brownish cast; a pair of strong prescutellars and strong interalars, the acrostichal hairs clearly in six rows between the interalar lines. Scutellum with a few hairs on disc and margin in addition to the usual four bristles. Humeral bristle small, notopleurals strong, the presutural rather strong. Mesopleura with hairs and bristles, sternopleura with one strong bristle and additional hair. Pleura gray pollinose, less brownish than mesonotal disc. Halteres pale. Legs mostly dark with grayish pollinosity; hind basitarsus as long as the remaining four segments combined.

Abdomen uniformly grayish pollinose. Wings hyaline with slight brownish color. Costal index about 1.6; fourth vein index about 2.0; costal vein strong, black.

Body length, 2.0 mm., females larger than males; wings, about 1.7 mm.

Holotype, Trona, San Bernardino County, California, July 19, 1951, deposited in the Academy of Natural Sciences of Philadelphia.

Paratypes: 13, from the type locality and from Olancha and Lone Pine (Inyo County), California; collecting dates are March 31 to July 20. The Trona material came from the salt flat just N.E. of the town, the type locality thus being the same as that for *Asmeringa lindsleyi,* n. sp., and *Scatella salinaria,* n. sp.

Ptilomyia pleuriseta (Cresson)

Atissiella pleuriseta Cresson, 1942. Tr. Amer. Ent. Soc. 68:111.

The species was described from New Mexico. We have examined 23 specimens, from Texas (near-coastal saline areas from Port Lavaca to Brownsville), New Mexico, California (Riverside, Imperial, and San Bernardino counties), and Lower California.

TRIMERINA

Trimerina Macquart, 1835. Hist. Nat. Ins. Dipt. 2:528.
Trimerinoides Cresson, 1925. Ent. News 36:165.

The genotype of *Trimerina* is *Notiphila madizans* Fallén; that of *Trimerinoides* is *Trimerina adfinis* Cresson. We have seen

both. The group was treated by Cresson (1942, Tr. Amer. Ent. Soc. 68); we have included it here because we feel that it is more convenient to regard the two species as belonging to a single genus (we cannot even justify a subgeneric distinction), and because our records, though few, considerably extend the known distribution of both species.

The two species are uncommon in collections. *T. madizans* has been reared, in Europe, from larvae found feeding on the eggs of a spider. The Nearctic species may be separated as follows:

1. Abdominal tergites flat dorsally, conspicuously finely punctate; facial pollinosity dense, nearly forming a pubescence; wing lacking an apical dark cloud and with costal cell pale .....**madizans** (Fallén)
   Abdominal tergites rounded dorsally, only microscopically punctate or ridged, not conspicuously so; face with thin whitish pollen; wing with dark costal cell, a cloud over the posterior crossvein, and a brown mark over apex of second vein .....**adfinis** Cresson

Trimerina adfinis Cresson

Trimerina adfinis Cresson, 1922. Ent. News 33:137.
Trimerinoides adfinis Cresson, 1925. Ent. News 36:165.

Cresson (1942) recorded this species from British Columbia and Idaho. We have a single specimen, from Kern County, California.

Trimerina madizans (Fallén)

Notiphila madizans Fallén, 1813. Handl. K. Svensk. Vet.-Akad. 34:252.
Notiphila nigella Meigen, 1830. Syst. Beschr. 6:72.
Trimerina madizans Macquart, 1835. Hist. Nat. Ins. Dipt. 2:529.

Cresson (1942) reported this as occurring in Europe and in New England; in 1924 (Ent. News 35:163) he recorded it from Massachusetts, New Hampshire, and New York. Johnson has added Maine to this list. We have examined two European specimens (one of them determined as *T. nigella* by Kertesz) and 10 Nearctic specimens, from Manitoba, New Jersey, Minnesota, and Colorado.

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